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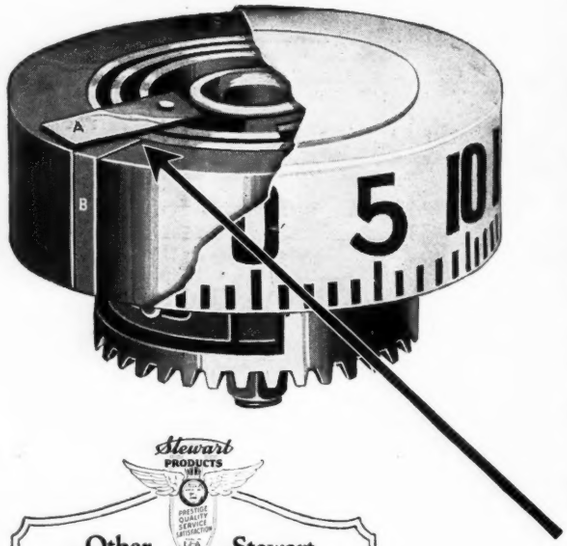

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AUTOMOTIVE INDUSTRIES
The AUTOMOBILE

VOL. XLIII NEW YORK—THURSDAY, OCTOBER 7, 1920 No. 15

Trucks and Tractors Have Prices, Too

What Henry Ford did to the passenger cars, he also did to a degree to other automotive vehicles. The problems of these manufacturers have some variance with that of the passenger car, a few of which are mentioned, merely in the way of recalling them.

By Clyde Jennings

WHEN Henry Ford cut the price of his motor cars he also cut the price of his truck and his tractor. It was very natural that these two lines should be overshadowed for the time being by the publicity and attention given to the passenger car problems. In the first place, the automobile business bulks greater than both of the other two lines, and then, the motor car affects more or less the life of every individual.

Plenty of economic experts will prove to you without a shadow of a doubt that the truck and tractor are really more vital in the place they hold in the daily life of the "average family" than the passenger car. This is true and we grant it, only the "average family" does not yet know this and for that reason Mr. Average and his family think and talk more of passenger cars, even if his daily connection be only that of standing on the curb and wondering when and how he can get across the street.

But Ford gave the truck and tractor manufacturers just as much to think about as he did the passenger car makers and we have plenty of evidence that a good many of them have been thinking seriously, as witness the announcement of some price cuts on trucks. The tractor is still further removed from the public eye and the effect of the Ford action is still less spectacular, less likely to reach the public and will be slower. But the tractor folk are thinking too.

The rather prompt response to the Ford action on passenger car prices was a bit of a surprise. A good many observers expected a more or less falling in line, but they did not expect it quite so promptly. Also there was one experiment that is going to be very interesting. It is being tried in both passenger car and truck fields. It is this:

Several companies have guaranteed prices over a period of months. This is, in effect, an experiment to learn whether or not a price reduction is necessary to a stimulation of sales. In other words, the dealer and his salesmen have been placed in a perfectly sound position. They can say to the customer:

"If the price on our car is reduced before January 1, we will reimburse you for the reduction."

The salesman CAN say this if he wishes, or he can go ahead and sell the car without pledge if he can. If he puts over the sale without a pledge he has put over a very good deal for his employer and perhaps for himself. But this detail and as to who gets

the guarantee in case the price is cut, is a matter that will be settled inside the dealer's own office. It will be interesting to see how the dealers work it out. *Also it will be important.*

We have said that this is an interesting experiment. If these cars on which the price is guaranteed are cut within the period, it will be a concession that the price cut was best for the stimulation of sales. If these cars continue to sell well enough to maintain the prices, some of those who did cut will have learned a lesson that they can apply to their selling problems in the future. Time alone will supply the answer to this question and we hope that the student of automobile selling will not forget to note the conclusion.

But we appear to be wandering from the subject—trucks and tractors.

We want to get this thought into this article. There are several fundamental differences between the sales of passenger cars and of trucks and tractors. Let us state them in this way:

1—Only a moderate percentage of passenger cars is essential at the time the sale is made. We will venture that within 90 days 90 per cent of the passenger cars become essential because of the place they make for themselves in the lives of their owners. But at the time of sale they are the object of a desire to own a car or to own a larger one.

2—Trucks and tractors usually are entirely essential before the sale is made. A buyer does not become a prospect until he is convinced that he needs transportation and needs it badly. Then the purchase is made on certain terms.

3—Assuming these two premises are correct, the standing of the two lines is established, and the attitude of the customer is fairly well outlined. So the unsold passenger car, as an object of desire rather than an essential, can be eliminated from the things to be possessed more easily than the truck or tractor. That is, the passenger car must be more apprehensive of public opinion than the truck or tractor. The public well knows this; perhaps it does not know why it knows it, but this explains the focusing of attention on the car.

Just as we have contended that the disposition of the people not to buy cars at the prices which were is psychological, based on a wave of public opinion, so we will hold that to a certain extent public opinion rules the more essential purchase of trucks. Every business man knows that even essential purchases can be regulated more or less to suit the existing conditions.

Let us assume just now that a man engaged in the woolen trade has been told by his traffic manager that he needs two more trucks. First off he thinks that this is very bad news to reach him at a time like this, when his customers are not buying as they should and he does not know exactly when they will resume. Profits are smaller than they should be, because he is writing off his losses necessary to the price adjustment that hit him some time ago. He is inclined to look at the situation rather as a pessimist, especially if it comes to his attention that the price of the truck recommended has experienced war inflation but no reduction.

We all know only too well that we are inclined to look at all business through the eyes of our own business. For instance, if the paper business was exceedingly dull, we might be inclined to think that all sorts and kinds of business were going to the dogs.

But the case of the woolen merchant is not completed. Suppose he decides not to buy those two trucks in the HOPE that business may slump a bit more and he will not need them. How different it would have looked to him if the truck he contemplated had suffered the same price recession that his goods had suffered, we are not prepared to say. We hold, however, that there is a lot of truth in the old adage, "Misery loves company."

"But labor has not yet reduced its price" is the most frequent answer to a lower price suggestion. But these facts remain:

Everywhere production men are saying that labor is more efficient and a dollar to-day is buying much more production than it did six months ago.

The best argument to present to labor under present circumstances is that your own product is lower in price, because of competition. You will recall that when commodities began to rise in price, labor lagged behind. Labor paid increased living expenses for weeks and perhaps months before the change appeared in the pay envelope. Now labor must be allowed to have advantage of the same lapse of time.

It is a poor rule that does not work both ways.

The question as to whether a truck price can be cut, or whether it must be raised is quite another thing. This answer can be made only from the factory where the truck is made.

There is this general rule in business today. Prices are and have been considered as a whole at an abnormal figure. In the main these prices reached their peak because of:

(1) Bad transportation.
(2) Hoarding of certain commodities.
(3) The demands of labor.

Today:

(1) Transportation is visibly improving (thanks very much to the truck).
(2) The banks are uncovering the hoarded commodities.
(3) Labor is less urgent in its demands for higher wages and is easier to obtain.

In the face of these changed conditions, certain concessions must be made. As we see it today, a price concession is not an admission of profiteering, but an announcement on the part of the manufacturer that he is alive to the situation and he is not going to be a profiteer as the general prices go down. To maintain prices of one article in the face of the gen-

eral leveling would mean, on the face of the returns:

(1) That the manufacturer had been operating at a loss or a very small profit when everything was at its peak, or

(2) That the manufacturer has not been satisfied with what he got while the getting was good and that he is going to take all he can get now and ever after.

There is another argument, that we must admit among ourselves, which makes for lower prices. When the big buying urge was on, there was a strenuous effort on the part of practically every factory in the country to maintain production regardless of expense. Premiums were paid for certain materials which were short. Compartments in sleeping cars were hired for the transport of needed materials and entire carloads of materials went forward by express and parcel post. All of these creditable means of maintaining production ran heavily into money. Certainly they are not necessary to-day, and most of the material men who were traveling over the country have been turned to peace time pursuits.

All of these things must mean a softening of prices.

We are getting back to a near normal stage of manufacture, or we soon will be. This means that war time values must be left to the war period.

We do not expect that values will recede to the 1914 level but in automotive manufacturing there should be an appreciable recession. AUTOMOTIVE INDUSTRIES, in its editorial and advertising pages, has told of many wonderful manufacturing achievements, of the amazing work of the newer machine tools, of new ideas in assembly and other shop improvements that make for cheaper and better production.

This has been the story of the automotive industry from its infancy. Contrast our methods and prices today with those of the countries where such methods have not been introduced. Then ask yourself:

If my factory is not producing vehicles at less cost today than four years ago, why isn't it?

If it is not, admit that you have not kept pace with the time and set about to find out where you have been lax.

Certainly there is something wrong with the automotive factory that has not lowered its production cost in four years.

We heard the other day of a truck manufacturer who was going to raise prices and stop his advertising. That is a peculiar angle. He may be justified in raising his prices, but if he does he is going to need more advertising than ever. Truth is mighty, but it takes a long time to prevail unless it has a good press agent. Somebody has got to explain to the future buyers of this truck why it is justified in now raising its price, and what means of explaining this is cheaper than the proper kind of advertising? We believe that this man had been using the wrong mediums, but this is a poor time to stop. Even a change of mediums must be made at something of a risk. What this man should have done was to add to his advertising, until the crisis was passed, the right mediums.

There is another angle to this situation that is becoming very evident because of price softening in some of the other lines. Tersely stated, it is this:

The truck and tractor sales managers have been oversold on the farmer as a prospect.

For several months we have been hearing a lot of publicity on how many trucks and tractors the farms were going to absorb. In most cases it was intimated, if not said plainly, that the farmers were going to have a bumper crop of money and after they got through measuring this money in bushels, they were going to shovel it over into the bins of the truck and tractor manufacturers for labor saving machinery. The chief reason for this was the attractive prices for farm products and the scarcity of help.

Always it should be remembered that the tractor is a newer article of merchandise and has not yet settled in its ways, as had the motor car and truck. The design is not yet a fixture and many of the tractors are still experiments. The parts business has not developed the cheaper manufacture as it has for the other two lines. It will be sometime before mass and efficient production will be possible.

But behind this, lies the fact that even if tractors are being made at a loss, or at a very small profit to-day, the men behind these tractors must be prepared to meet the sacrifices necessary to introduce their equipment for future benefit.

But times change and what do we find to-day?

Since early in May the farm boys who deserted the plows to cash large pay checks in the silk mills, woolen mills, shoe factories, tire factories and automobile factories—not to mention many others—have been crowding the trains back to the farms. Worse than that, with the starting of this procession, farm products began a steady downward trend. The sale of trucks and tractors was based on $2.50 wheat, $1.50 corn, $16 cwt. hogs, $10 bbl. potatoes and so on down the list. Compare these prices with those quoted to-day and then remember that the farmer has plenty of the kind of labor that he is familiar with which is to be had on a falling market.

It will be well for the truck and tractor maker to get ready for an intensive selling campaign if he is going to harvest a lot of money from the farms. He will find the resistance very strong when it comes to opening the pocketbooks.

For just a few lines let us specialize on tractors. It will not take long, for common sense is the biggest factor in selling, whether it is tractors or shoes. Also the law of supply and demand, by and large, governs. You may upset it for a time, also you may turn the current somewhat into the eddies, but the boat in the main stream makes the best mileage.

There is a large new crop of tractors coming on the market at very high prices. Here is an instance:

One of the newest tractors has a two cylinder engine, has half the rating of a Fordson, lacks a really distinguishing feature, but is priced $300 higher than Ford's well known machine.

There are other factors to be considered:

Quite a number of the newer machines have a promised production of 300 a year and almost as many dealers in all sections of the country. This in itself is an impossible selling proposition.

Some of these newer companies are making no provision at all for service and as far as one can learn, have given the parts stocks at places available to users of their vehicles no thought. And yet some of the newer makers wonder why the big and older companies continue to take the most of the business!

Tractors cannot entirely escape a taint from the recent declaration of the Federal Trade Commission that farm implements were priced too high. They were not named in the indictment made public, but they are closely associated with the lines named and will be tainted because of the company they keep. That indictment may be all wrong. We hope that it was entirely false, but in the eyes of the public a man usually is held guilty until he is proven innocent. So for a period at least tractors and farm implements generally are under suspicion. This is, at least, a handicap on trade.

All of these things affect the appeal that must be made to the buying public. It will require good salesmanship and good advertising (quite the same thing) to turn the tide.

For several months the selling of automotive products has been an easy money Comedy. Within the last few weeks it has been changed into a Melodrama. Only a complete lack of intelligence can change it into a Tragedy.

As a finale, let us say this:

We are not attempting to say that all trucks and tractors must be reduced in price. We do say that a lot of them should be reduced. We merely say this:

(1) The easiest way to meet the situation is to reduce.

(2) If you cannot reduce, put all steam and intelligence possible into your selling campaign. Talk facts and have the proofs handy.

(3) If you increase your price, be certain that you have enough reserve to finance the campaign of education to convince your public that you are honest.

In taking either of the two last named courses, keep in mind that it is the dealer who must fight the battle and he must have ammunition. Also that you are in sort of a besieged position and you must have your reserves within reach, for the banks and the public are not going to love the man who stands pat on war prices. Before making the decision be sure you

KNOW YOURSELF,

KNOW YOUR PLANT AND

KNOW YOUR DISTRIBUTING ORGANIZATION.

Rubber Covering Is Not Sufficient for Leakproof Tanks

LEAKPROOF tanks are most desirable for Army airplanes, and some interesting experiments were recently made at McCook Field to determine the suitability of types now under consideration. Investigations made to date show that the types depending on a slight rubber compression for the closure of entrance holes are not good enough for the purpose. The tank made of plywood and rubber gave a much better performance. It withstood the entrance of the incendiary and the exit of the service bullets to a degree comparable with the larger rubber covered tanks and, in addition, proved quite strong in shock resisting powers. However, its excessive weight, 3 lb. per gal., and method of construction make it impractical, in its present form, for application to airplanes. Two tanks were used in the tests which were recently made.

Tank No. 1 was an 18 in. cubical tank (inside measurement) made of wood, rubber and metal. This tank was constructed by first framing 1 x 1 in. maple pieces along the edges of the box. Over this frame were placed plywood panels, ½ in. thick, faced on the inside with 0.005 in. brass sheeting. Over these panels were placed four layers of sheet rubber, making a total rubber thickness of ¼ in. Lastly, over the rubber were placed plywood panels ¼ in. thick. The outer panel was then tightly clamped down by square head wood screws seating in the frame inside. The plywood was of spruce, and linen fabric was placed between adjacent plies. The capacity of this tank was 25 gal. and its weight, 77 lb.

Tank No. 2 was of cylindrical shape, with hemispherical ends, made of metal and rubber. Terne plate was formed into small angle sections and made into a suitable frame. This frame was then covered with brass 0.010 in. thick. A protective cover of 17¼ oz. fabric was placed next to the form and the ¼ in. of rubber over the fabric. After curing, the rubber cover is removed from the form, turned inside out and laced on the tank. This formed a cover in which the rubber is under a slight compression over the whole surface. The tank was 20 in. in diameter, and the rounded ends of 10 in. radius. The total height of the tank was 34 in., its capacity 34 gal., and it weight approximately 46 lb.

The rubber used in both of these tanks was a compound made as follows:

Fine Para or its equivalent	92 lb.
Sulphur	6 lb.
Magnesium Oxide	2 lb.
Total	100 lb.

The rubber was cured for maximum elasticity.

These tanks were filled three-quarters full of gasoline and fired at with a 30-caliber Springfield rifle from a distance of 30 yd. All normal shots were fired into a 4 in. circle in the front of the tank. All angle shots were fired into a 4 in. circle on the side of the tank and next to the rear so that bullets would exit at an angle of about 45 deg. through the rear face.

The results of the test are detailed as follows:

Tank No. 1, Plywood. Capacity, 25 Gallons. Weight, 77 Lb.

Bullets	Direction	Entrance	Exit	Remarks
1	Normal	1 leak	No exits	
8	Angle	No leaks	2 leaks	(one small, one large)

Total: 12 shots, 2 small and 1 large leaks.

Tank No. 2, Cylindrical. Capacity, 34 Gallons. Weight, 46 Lb.

Bullets	Direction	Entrance	Exit	Remarks
2	Normal	2 small streams	No exit	
1	Angle	No leak	No leak	
1	Angle	No leak	Large leak	

Total: 4 shots, 3 leaks.

Six New Tractors Shown at California Exhibit

Large attendance and great interest shown by Pacific Coast dealers looks well for regional plan of national shows. Demonstrations were barred by the exhibition rules, but more than 40,000 persons made 15 mile motor trip to see the machines as they stood. Fordson made its bow as factory exhibit but several of largest manufacturers were not represented.

FEW new machines were displayed at the tractor show held near Los Angeles, Sept. 20-26. This may be attributed to the lateness of the season, as it was hardly likely that manufacturers could have worked out whatever changes they may contemplate in time to have them incorporated for this show. The Los Angeles event was the first of the tractor shows to be held under the so-called regional plan of national exhibitions. It was a still show, and demonstrations were barred by the rules. The attendance for the week approximated 40,000.

Inasmuch as this show was planned and carried out particularly in the interest of dealers, there were not as many factory representatives present as might have been expected. Henry Ford & Son, however, established a precedent by exhibiting directly. This was the first show at which this concern has exhibited, except through its distributers. A large crew of mechanical experts and a force of salesmen were constantly on hand. It was apparent that the Ford company is going to make a more determined drive than ever for the tractor business. The announcement of the price reduction was made while the show was in progress, and there is no doubt but that it served as a wonderful business stimulant.

This was the first national show at which have been seen the Allen, Thorobred, Burbank Farmer, Keystone, Stockton and Stutes-Mar. Because demonstrations were barred, there was no opportunity to see what these machines are capable of. All are California-made tractors and all are under production to a greater or less extent. The Stockton has been on the market for two years. Production facilities are not equal to the demand, and as a consequence no effort has been made to sell the tractors east of the Rocky Mountains. The Stockton Tractor Co. manufactures the tractors, and the entire output of the company has been disposed of to the A. B. Johnson Co. The contract with the Johnson company covers the output for five years.

The Yuba introduced a smaller model than the line has included heretofore. It is of the same general characteristics as Yuba tractors have been for several years. The chief point of interest to the user in connection with this machine was the chair-back seat for the driver. This was in decided contrast to the old style seat, as it affords some degree of comfort. The Fageol, another California tractor, was shown in a new model, but presenting no radical changes. This model is designed especially for use in bean and beet fields.

The Cletrac was shown for the first time in the new Model W. This is featured by a ¼-in. larger bore of the cylinders. Annular ball bearings are used instead of roller bearings. A by-pass oil line is provided to prevent fouling the spark plugs. The pendulum type of drawbar is used, as are shock absorbing springs. There also is an improvement in the air purifier.

Tractor dealers who were present from all parts of the Pacific Coast were for the most part looking for improvements in the old-line tractors. In this they were disappointed. It was evident that manufacturers did not attach enough importance to this show to rush their new models through in time to display them here. In this they erred, as the attendance, interest and sales were enough to justify the best being put forward. Some of the largest manufacturers in the country were absent, and dealers in many cases were disappointed at not finding them.

There were no demonstrations of any kind. Many of the exhibits had tractors in operation, but aside from the noise made by the exhaust of these machines the show could have been held in some downtown building just as satisfactorily as it was in the open air. Some criticism was heard because the show was located 15 miles from Los Angeles without any apparent advantages except as to parking space for automobiles.

The scenic setting of the show was perfect and the management and sponsors seemed to have left nothing undone that might in any way have helped to make it successful. The attendance grew as the show progressed, and on closing day, a Sunday, there was present the biggest crowd that had been on the grounds.

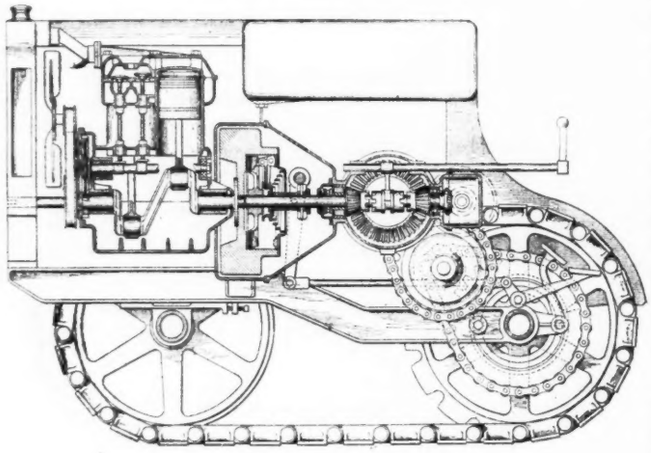
Guy Hall, who promoted and managed the show under the direction of the Tractor and Implement Dealers Association of Southern California, said the first regional show has proved so successful that there never will be any more demonstrating shows of equal magnitude and importance. Some of the exhibitors declared for the still show as far superior to the field work, but there were others of different opinion. The difference in the expense of a demonstrating show was said to be offset by the cost of decorations at the still show, and, moreover, the objectors expressed a preference for a chance to show dealers and consumers what their tractors will do. Advocates of the still show maintained that both dealers and consumers are "tractor-wise" these days, and field work is not necessary to attract their attention. Perhaps 80 per cent of the exhibitors expressed themselves in favor of the still show.

The display of power implements was especially large and very good. The Otwell mower, designed and built especially for use in connection with the Fordson, was shown for the first time. The Oliver people had probably the most comprehensive implement exhibit. The motor trucks that were on display attracted very little interest, and this feature might just as well have been omitted for all the good that resulted.

Descriptions of Tractors First Shown at Los Angeles

THE Burbank Farmer tractor is a small machine designed for general work on the small farm, including plowing, cultivating, disking, harrowing, etc. It can be driven by means of lines from the seat of the implement, or the operator can ride the tractor. This machine is made either as a track layer or as a wheel-driven tractor, and by fitting flanged wheels the machine can be used for work in factories and mines, and on cotton and sugar plantations.

The power plant comprises a two-cylinder, 3¾ x 4 in. vertical motor, operating at 900 r.p.m., of the company's own manufacture. The power is transmitted through a



Burbank Farmer tractor

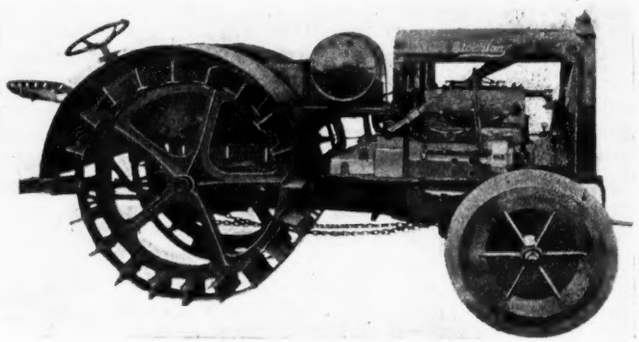
Borg & Beck clutch to the transmission gear, which also is of the company's own manufacture. It comprises one bevel gear and two bevel pinions, one for the forward speed and one for the reverse. These gears always remain in mesh and are put into and out of action by means of a sliding jaw clutch. The final drive is through roller chain and sprockets. The weight of the machine complete is 1200 lb., and its overall dimensions are as follows: Height, 36 in.; length, 60 in.; width, 26 in. The wheelbase is 30 in. The speed range from 1 to 4 m.p.h. is obtained by varying the speed of the engine. The plowing speed is 2½ m.p.h.

The Allen Model A, which is made by the Community Mfg. Co., is a conventional type of four-wheel tractor, with a 10-20 hp. rating. The engine is the Continental 4-cylinder, 4⅛ x 5¼ in., and is governed by a fly-ball governor at 950 r.p.m. Either gasoline or distillate can be used for fuel. No differential gear is used and no gear shifting is required, as all gears remain enmeshed at all times. All gears of the transmission are cut from alloy steel, and their shafts are mounted on roller bearings. The complete transmission, including the bull pinion and bull gears, is enclosed in a dust-proof housing and runs in oil. The elimination of the differential gear makes the transmission exceedingly simple. Both of the driving wheels are mounted free on the stationary rear axle, but either driving wheel or both can be secured to the axle by means of two clutches. In making a turn the inside wheel is left loose on the axle and remains practically stationary, while the outside wheel is engaged by the clutch and does the propelling.

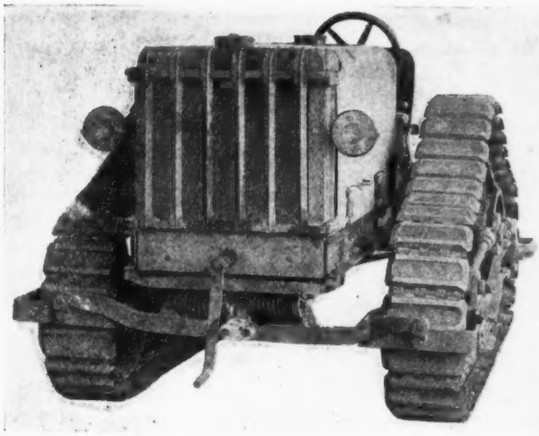
The advantages claimed for this construction are that a very short turn can be made, that the driver is freed of the exertion of steering by the front wheels, and that in straight ahead pulling, both wheels are solidly engaged, and there is no possibility of loss of traction when one wheel gets onto slippery ground. The transmission provides only a single speed forward, which is 2½ miles in plowing, but by means of engine speed control the tractor speed in road work can be increased up to 4 m.p.h. The rear wheels measure 44 x 12 in. and the front wheels 26 x 5 in. The tractor complete weighs 3400 lb.

The *Stockton* tractor is made in two different models, the Open Wheel model and the Sure Grip model, the latter being a chain track type, with front wheels for steering. Both machines are the same except that in the Sure Grip model the rear wheels are replaced by a chain track construction. The power equipment consists of a Herschell-Spillman four-cylinder 3½ x 5-in. block cast engine, provided with a Pierce governor. Ignition is by a Berling magneto, and cooling by a Modine Spirex radiator, pump and fan. The transmission affords two forward speeds, of 2½ and 3½ m.p.h., and one reverse. Hyatt roller bearings are used throughout. The clutch is a twin disk. A semi-circular form of drawbar, with a sliding hitch, is employed. A feature of the wheel tractor are the open wheels, which are made in one piece, without nuts or bolts, these wheels being directly keyed to the driving axle. The unique construction of these wheels make them self-cleaning and non-packing, it is said. Instead of a separate frame, this tractor has a unit base; that is, the lower halves of the crankcase, transmission case and rear axle are all in one-piece and form a supporting member, taking the place of a regular frame. All parts operate in oil and are enclosed dustproof.

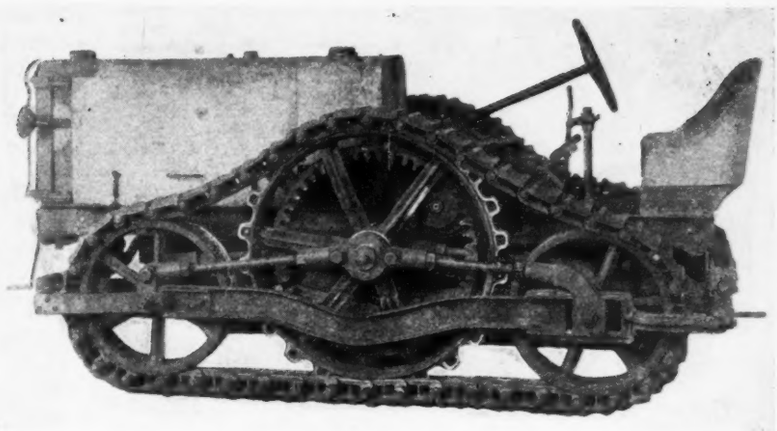
Allen model A tractor



Stockton open wheel tractor



Front view of Keystone tractor



Keystone creeper tractor

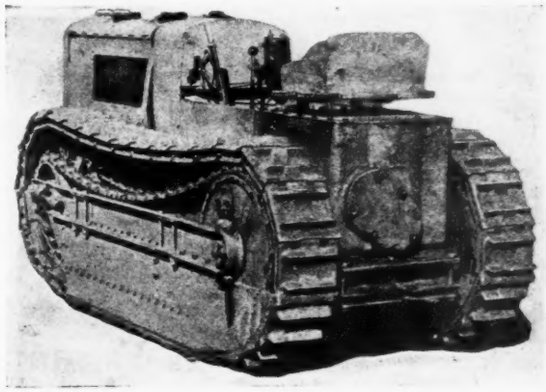
In the *Sure Grip* tractor there are driving members or tracks of manganese steel, having an aggregate bearing surface of 600 sq. in. The overall dimensions of this tractor are as follows: Length, 86 in.; width, 46 in.; height, 50 in. The total weight of the tractor is 3700 lb. Two 12-in. or three 10-in. plows are recommended for use with both of these tractors. A 5 or 6-ft. double disk arrow can also be used to advantage. The feature of this model is the Sure Grip manganese steel track, which is guaranteed for two years. Male and female links couple into each other and are held in line by steel straps. There are no pins or bushings, and the driving spools are exceedingly large, being 2¾ in. in diameter. Each link is 10 in. wide. Each track runs over two sprockets and two guide pulleys, all of manganese steel. The tracks are spring mounted at front and rear, so as to relieve shocks. A simple adjustment serves to keep the track taut.

The *Keystone* tractor, manufactured by the Keystone Iron & Steel Works, is of the track layer type, and is equipped with a four-cylinder, 4¾ x 6 in. Doman T-head engine. The normal speed of the engine is 800 r.p.m., and the horsepower rating of the tractor is 15-30. Either kerosene or gasoline may be used as fuel, the normal tank capacity being 20 gal. kerosene and 1 gal. gasoline. The clutch is a Racine Twin Disk, while the transmission is of the Keystone company's own design and manufacture, comprising hardened steel gears on shafts mounted in Hyatt roller bearings. Gurney ball bearings are used in the track wheels. Two forward speeds are provided by the transmission, viz., 14: 1 for the high gear, and 18: 1 for the low gear and reverse. The axle, which is located at the center of the track and carries all the weight of the tractor, is a cast steel member of I beam section. The frame is made of 5 x 2-in. steel channels. The machine is 54 in. high, 60 in. wide and has an overall length of 11 ft. At the lowest point there is a ground clearance of 14 in. The minimum turning radius is 10 ft. The total weight of the tractor is 6500 lb. Electric light and generator are furnished as standard equipment. All wearing parts of the chassis are lubricated by the Alemite system. The driving gears are cast in sections and can be quickly reversed, whereby their wear is doubled.

The *Stutes-Mar* tractor, made by the Stutes-Mar Tractor Co., is also of the track layer type and is designed particularly for use in orchards and in beet, asparagus and general truck farming. The tracks are 10 in. wide, and are spaced 36 in. apart from center to center, which is said to make it just the right width to span two rows of beets. The overall dimensions of this tractor are as follows: Height, 52 in.; width, 51 in.; length, 118 in. The total weight of the tractor is 7000 lb. and the bearing area on the ground is 1440 sq. in., making the unit pressure less than 5 lb. per sq. in. A Waukesha 4½ x 6¾-in. engine is fitted, running at 850 r.p.m., and consuming distillate or kerosene. Among the engine accessories may be mentioned an Ensign carbureter, Eisemann magneto with impulse starter, and Modine sectional type radiator. The clutch is a Borg & Beck, and the transmission is a Cotta jaw clutch type. Three forward speeds are afforded by the transmission. At 1.55 m.p.h., the drawbar pull is 6000 lb.; at 2.25 m.p.h., 4000 lb., and at 4 m.p.h., 2650 lb.

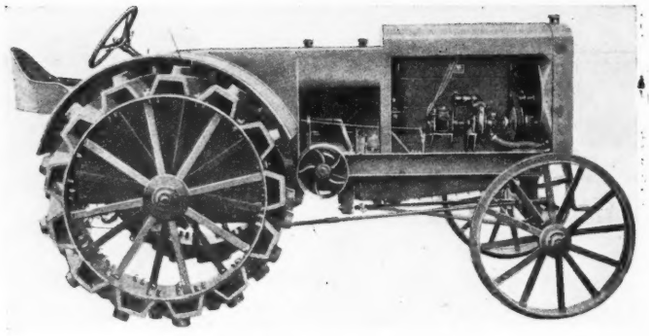
The Stutes-Mar is said to be specially well adapted for orchard work and for side hill operation. In spite of its low center of gravity it has plenty of ground clearance. The weight is equally divided between the four corners of each track shoe.

The *Thorobred* tractor, manufactured by the Commonwealth Tractor Co., is an assembled machine and is of what may be described as the semi-frameless type, there



Stutes-Mar track layer type tractor

being short frame members only at the sides of the engine, which bolt to the forward end of the combined transmission and rear axle housing. This tractor comprises the following parts: a Beaver 4¾ x 6-in. engine, running at 900 r.p.m., with Zenith kerosene carbureter, Dixie high tension magneto with impulse starter, and tubular type radiator; Nuttall two-speed and reverse transmission; live rear axle, 3¼ in. in diameter, running in Timken roller bearings; special design of front axle said to insure easy steering. The two forward speeds are 2½ and 3¾ m.p.h., and the reverse is 1¾ m.p.h. at normal engine speed. This tractor has a wheelbase of 86 in., a tread of 57 in., a total width of 70 in., a total length of 12 ft., a turning radius of 15 ft. and weighs complete between 5900 and 6000 lb.

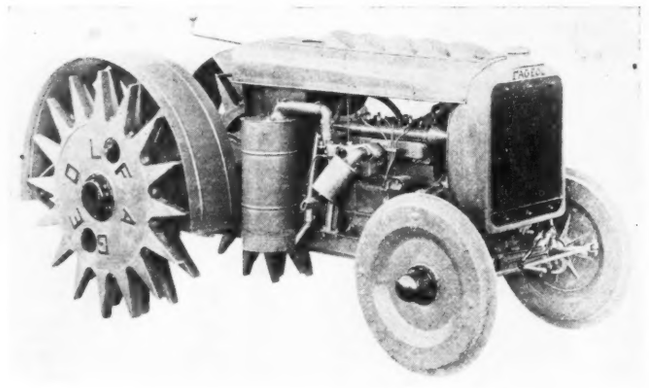


Thorobred wheel tractor

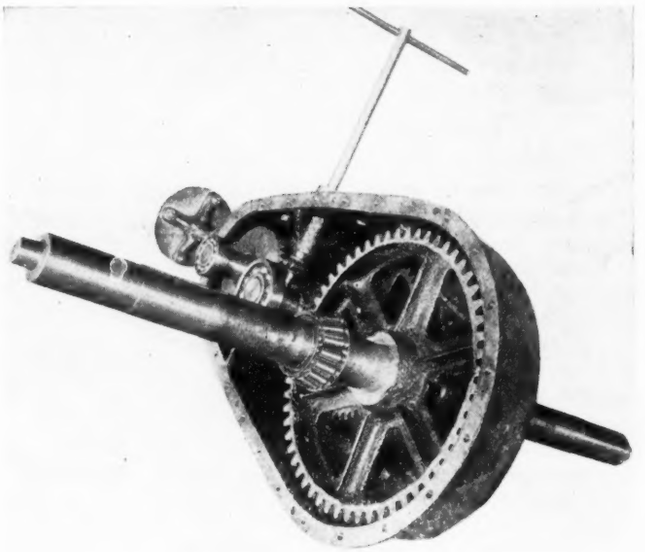
The feature of the *Fageol* tractor, manufactured by the Fageol Motors Co., is the grouser wheel with individual clutch. The drive wheels are 28-in. drums, fitted with two rows of grousers each, sixteen in each row. Each grouser is a hollow edge, 10 in. long and 2¼ in. across the driving face. The entire weight of the rear end of the tractor is sustained on these grousers. Owing to their penetration, they are said to provide positive traction even in very loose soil. There being four rows of grousers on the two wheels, it follows that in hard soil there are always 8 points of contact on the ground, and when the soil is loose and the grousers penetrate deeply, there are some 12 to 60 points in contact with the ground.

In the drum of each driving wheel is a clutch controlled by a separate pedal. Any tendency of the tractor to slide down hill on a side hill is counteracted by disengaging the uphill side clutch, throwing all the power to the down hill drive wheel, which holds the tractor up the slope. By releasing the clutch on one side, the tractor can be turned around in a circle of 13½ ft.

The engine is a four-cylinder type of 3½-in. bore by 5-in. stroke, and operates at 1200 r.p.m. Lubrication is by the circulating splash system. Magneto ignition is used. Either gasoline or kerosene can be burned, but gasoline is recommended. The fuel tank holds 12 gal. Air is drawn in through a Fageol type air cleaner. The transmission affords only one forward speed and one reverse. All gears are made of alloy steel, with machine cut teeth, case hardened, and the gear shafts are mounted on ball bearings in dustproof cases and run in a bath of oil. No differential is used. The rear live axle is 3⅛ in. in diameter and is mounted on Timken roller bearings. As already pointed out, the clutches are located in the rear wheels; they are of 25-in. diameter with 3¾-in. face, and are of the expanding type. The front axle is an I section, pivoted at the center to allow for unevenness of the ground. Steering is effected by a tiller lever and drag link connection. Disk wheels are used at the front, beveled so as to keep down the dust. The wheel bearings are oiled from dust tight hub caps. Steel bands made in halves and held in place on the grousers by two bolts are used for road driving. These are extra equipment.



Fageol tractor with grouser wheels



Transmission and rear axle of Fageol tractor

Estimated Demand for Spark Plugs in 1920

THE number of spark plugs required for new equipment and replacement on cars, trucks, tractors, etc., has been calculated with considerable care by the Research Department of the Class Journal Co. Individual specification sheets of various manufacturers were used to ascertain the number of cylinders in each case. These figures, used in connection with production figures for the past six years and estimated figures for 1920, make it possible to calculate the quantity of spark plugs required with a fair degree of accuracy.

New equipment, spares and replacements required for 1920 production:		
Cars and trucks	23,625,000	
Motorcycles, tractors, farm light systems, stationary engines, motor boats and airplanes	3,610,000	
		27,235,000
Replacements required for apparatus produced prior to 1920 and now in use:		
Cars, trucks, tractors, etc. (see above list)		109,583,928
Exports (including Canada) for replacements		4,808,000
Required to replenish merchandise stocks, here and abroad		30,000,000
Total spark plugs required for 1920		171,626,928

THE Federal Deparment of Agriculture, in a statement under the title "Bureau of Chemistry Provides New Engineering Service for Business," says that the Government hopes to save millions of dollars for the United States through the creation of the Office of Development Work in the Bureau of Chemistry. According to Dr. C. L. Alsberg, head of the Bureau, future Government chemists who discover methods of recovering valuable products from factory waste will be able, through the aid of the new office, to present their discoveries to manufacturers well stripped of theory.

Welds and Welding—A Study of the Autogenous Processes

A careful study of joints that have failed is the foundation of this constructive article by Dr. Rosenhain, the English authority on metallurgical subjects, in which he analyzes these failures and suggests remedies. This article is of direct and important value to the automotive engineer.

By Dr. Walter Rosenhain, F.R.S.*

THE making of satisfactory and economical joints in engineering structures of all kinds has always proved a problem of fundamental importance, and there can be no doubt that the older methods of jointing, whether mechanical, riveted, brazed or soldered, all left a great deal to be desired from many points of view. It is small wonder, therefore, that the advent of the autogenous welding processes, whether by means of the oxy-acetylene blowpipe or the electric arc, has been hailed with enthusiasm, and that there is a powerful tendency at the present time to regard autogenous welding as the one and only solution of every jointing problem.

Advantages Numerous and Obvious

When, however, one has to deal—as the writer is often called upon to do—with the systematic study of a wide range of cases of failure in all kinds of engineering work, and meets again and again with cases where welded joints have failed, at times with disastrous consequences, it becomes desirable to consider the whole matter somewhat closely and to call attention not only to certain precautions and limitations which it seems necessary to observe in the use of autogenous welding, but also to certain inherent difficulties which require the careful consideration of any engineer who wishes to use welded joints in his work. This applies very strongly to the work of the automotive engineer, because in many cases the joints in his constructions are exposed to particularly severe treatment during use, while a failure might lead to very serious consequences.

That the process of making joints by autogenous fusion or "welding" is a valuable and important one, no one would wish to deny at the present time. Its advantages are so numerous and obvious that they need hardly be emphasized here, except that it may be desirable to show that the writer, so far from being prejudiced against the process, is most fully alive to its very great utility. Under war conditions, particularly, we have seen many cases where joints or repairs have been made successfully by arc or acetylene welding which could not have been made at all by any other method, except at prohibitive cost in money and time. There are also very numerous kinds of joints where the neatness and cheapness of the welding process gives it an overwhelming advantage over all other available methods. Even, therefore, if some of the difficulties and objections indicated below cannot be entirely overcome, there still remains an immense field of usefulness for all the autogenous welding processes. The point of view from which the subject is to be considered here, however, relates mainly to such joints as are exposed to the principal working stresses which arise in the structure or machine in question—where it is not a case, as in many repairs, of a choice of the lesser evil, but of designing new construction and selecting the best method of jointing.

In these cases also, there is much to be said in favor of the welded joint. Cheapness and speed of production are, perhaps, the greatest of these. Then there is, in many cases, the much greater neatness of the joint, the absence of lugs or of projecting bolts or rivets. And finally, there is the question of mechanical efficiency. Many tensile tests have been made and the results published frequently show that, particularly where it is permissible to thicken up the metal at the actual weld, the joint—under steadily applied tension—may be quite as strong as the rest of the material. Unfortunately, these results have sometimes been interpreted to mean that the welded part is as strong in every respect as if it consisted of a single piece of steel without any joint whatever. This is, for reasons indicated below, a serious error, and it is, in itself, unreasonable to claim so much for any form of joint. It should be borne in mind that no joint really attains the standard suggested; rivetted or bolted joints can only attain a tensile strength of rather less than 75 per cent of the uncut material, while many other types of joint are very much weaker.

Some Serious Failures

All these advantages being not only granted, but very fully appreciated, what remains? There is, in the first place, the general fact already referred to—a record of a number of serious failures of autogenously welded joints, and the detailed evidence derived from the careful study of autogenous welds both by means of mechanical tests of a more searching character and by means of microsections. Actually, a due consideration of this evidence, coupled with very extensive practical experience, has led to the abandonment of autogenous welding for some of the more important joints in the structural steel work of certain British aircraft during the war, recourse being had to the use of joints made by soft-soldering. It is surprising to find that, provided a sufficiently large area of soldered surface is used, such joints have proved much more reliable and satisfactory under the extremely severe conditions of war aircraft than any other form of jointing.

The investigation of cases of failure occurring in autogenously welded joints serves to show that breakage occurs, in the great majority of cases, as a result of

*Of the National Physical Laboratory, Teddington, England.

serious unsoundness of the weld. In a smaller number of cases failure appears to be due to the fact that the steel adjacent to the weld has been damaged by the welding operation. It is desirable to consider the two types of cases separately.

The Use of Fluxes

The difficulty of making thoroughly sound joints, whether by the aid of the electric arc or the oxy-acetylene blowpipe is, of course, fully recognized, and numerous devices and processes have been put forward for overcoming it. These, as a rule, take the form of the application of some flux. The object of applying such fluxes is generally two-fold, viz., to protect both the work and the rod or wire which is being used as filling material, from oxidation during the melting process, and also for dissolving and carrying away any oxide which may be formed or may already exist in the joint. In theory this is well enough, and in the hands of a really skilled and careful man, it is often very successful. Many of the joints made are, accordingly, very sound and satisfactory. The real difficulty is that there is not, and in the nature of things there can scarcely be, any real guarantee or security that every now and again the precautions employed or the skill and care exercised may not be insufficient, leaving a joint which is either seriously contaminated with enclosures of oxides or permeated by cavities and blow-holes large enough to render the whole joint very weak. Inspection of the finished joint, and even of the work while in progress, will only rarely reveal these hidden defects. It is in this respect that the joint made by autogenous welding is distinctly inferior to riveted or other mechanical joints. In the latter careful supervision and inspection can be made to insure really sound work, with the result that, although the best riveted joint may be very much weaker than the best welded joint, yet in any really large number of joints made by both processes, the weakest joint will always be found among those made by welding.

Wrought vs. Cast Material

This whole difficulty of securing complete reliability in autogenous welding may, perhaps, be better understood if looked at from another point of view. Long experience, as well as *a priori* considerations entirely justify the existing practice in which very strong preference is given to material which has been wrought—i. e., forged or rolled, or both—over castings wherever really important stresses have to be carried and great reliability is necessary. This preference is no doubt due, in considerable part, to the generally superior physical qualities which are obtainable from wrought as compared with cast materials. But there is also the further and very important fact that wrought materials are considerably more reliable than castings. A casting may, and sometimes does, contain serious internal defects which it is not possible to detect, except perhaps where the casting has to undergo a considerable amount of machining. In wrought material, such serious internal defects would make themselves evident during the working of the metal, and even if they did not, they would become compressed in one direction and elongated in another in such a way as to render them much less dangerous, although still undesirable. Castings can be made quite sound, and many of them are perfectly sound—but it is difficult to ensure the same degree of reliability with them as we look for in forgings, stampings, etc.

Weld a Misnomer

Now there is a very striking analogy between the material which forms an autogenous weld and a casting. The term "weld" is really a misnomer, since the method by which the joint is produced is simply that of autogenous fusion, without any of the forging and hammering operations which are associated with the term "weld" from its older use in connection with the joints made by the blacksmith in the ordinary forge. Actually, the joint consists of a layer, varying in shape and thickness, of material which has been melted and caused to coalesce more or less completely with the adjacent solid metal. This being the case, we cannot expect the material in the weld itself to exhibit any properties better than those of the same material in the form of a casting. It would seem, therefore, that it is at least as necessary to be cautious in the use of autogenously welded articles as we should be in the use of castings for a similar purpose. Castings are, of course, very extensively used, and engineering construction would be impossible without them, and similarly there is an extensive and growing field for the use of autogenously welded joints. Caution, on the grounds indicated, is, however, very necessary.

Effect of Heat Treatment Undone

Failures arising from damage done to the adjacent steel during autogenous welding are, fortunately, not very frequent. There is no doubt that even in plain carbon steels, the material only attains its best condition, particularly in regard to its power of resisting shock and fatigue, when it has been properly heat-treated, i. e., either simply "normalized," or, better still, quenched and tempered. In automotive work, particularly, it should prove well worth while exploiting the powers of the material by these means. If, however, this is to be done efficiently, it is necessary that the designer should be able to rely upon these improved properties of the steel being maintained during construction. If autogenous welding is employed, however, the good effects of correct heat-treatment, or even of merely correct rolling or forging temperatures, are entirely undone in the vicinity of the weld. It is true that the region affected may be very small, but stresses arising from shock or fatigue inevitably find out these softened spots, with the result that the part fails—not at the weld, but usually from one quarter to one half an inch away from the edge of the weld itself. In the neighborhood of a weld, the metal is exposed to a steep temperature gradient, and at a point at some such distance from the weld as that just indicated, the temperature of the steel is, for a short time, such that the material assumes that condition in which it possesses the lowest elastic limit and consequently the lowest resistance to fatigue. That is why failures of this type are always located in the manner indicated. It is true that the "cast" metal in the weld itself is, perhaps, in quite as weak a condition as that in the region referred to, but as a rule the metal of the weld itself is thickened up and for that reason resists the stresses and indeed causes a concentration of fatigue stresses in the softened region of the adjacent steel.

A Serious Matter with Alloy Steel

While these difficulties are not, perhaps, very serious where structures made of simple carbon steel put into use without special heat-treatment are concerned, they become extremely important where the use of special or alloy steels is concerned. These materials only attain the properties for which they are valued as the result of careful and correct heat-treatment. If after such treatment they are jointed by autogenous welding, the whole advantage of heat-treatment and of the extra cost of the special steel is simply thrown away. If the article stands service conditions, it merely proves that a cheaper steel could have been used equally well. If the use of alloy steel was really needed, however, failure near an autogenous weld is almost inevitable. This difficulty in welding

alloy steels has, of course, been recognized and efforts have been made to overcome it by such devices as the use of welding material of similar composition to that of the steel in question, but it will be seen at once that this cannot meet the difficulty relating to heat-treatment. There are, further, a whole group of steels which cannot be successfully welded for another reason. These are alloy steels of such a composition that, while they are not strictly "self-hardening" they yet become hardened if cooled at all rapidly. Now rapid heating, followed by rapid cooling, is an ordinary feature of most autogenous welding operations, and consequently if an attempt is made to weld steels of this type, they undergo hardening in the vicinity of the joint. In itself this might not be very serious, but it is nearly always accompanied by a marked change in volume and this is very apt to lead to the development of cracks between the hardened and unhardened portions.

X-Ray Tests on Joints

Having dealt with some of the difficulties and risks which undoubtedly attach to the use of autogenously welded joints in parts exposed to important stresses, particularly if shock and fatigue are involved, it may well be asked whether it is not possible to suggest means whereby these defects and difficulties could be overcome, in order that so attractive a method of making joints might become reliably applicable even to the most important purposes. No one can, of course, foresee what developments the future may hold in store in regard to this matter, but so far as present knowledge goes, there are only a few available possibilities and these are of limited applicability. Unsoundness of sufficiently important joints could, for instance, be detected by means of an X-ray examination of the finished weld, and this method has been successfully applied, but it is essential that the part should be sufficiently accessible. The application of X-ray examination to the inspection of steel parts of moderate thickness has, however, made very great progress in recent years and its application to the inspection of welds is by no means impracticable.

With regard to possible methods for improving the welds themselves, these reduce themselves to two types, involving mechanical work and heat-treatment respectively. If a weld made by autogenous fusion can afterwards be forged under a powerful hammer so as to bring about an appreciable reduction in thickness, there can be no doubt that many of the objections indicated above would be removed. A really unsound joint would probably come to pieces during such an operation, while minor cavities would be rendered much less dangerous. At the same time, the physical properties of the material in the weld itself and of the adjacent steel would be very considerably improved. It is, of course, evident that such mechanical working is, in most cases, impossible, and in any case it would add very materially to the cost of the work and to the time occupied. Heat-treatment alone, however, is readily applicable in many cases, and there can be no doubt that it affords very considerable advantages. Provided that the joint is a sound one, all the risks arising from damage to the adjacent steel and from the "as cast" condition of the metal in the weld itself, can be removed by proper heat-treatment. In the case of plain carbon steels this need be nothing more than simple "normalizing" by heating the whole piece, including the joint or joints, to a temperature just above the upper critical range of the steel, holding it at that temperature long enough to secure uniform attainment of the temperature, but not longer, and then allowing the whole object to cool fairly rapidly in the air. This type of treatment has been applied with very great advantage to numerous welded objects of moderate size.

Welding Steels of Air Hardening Quality

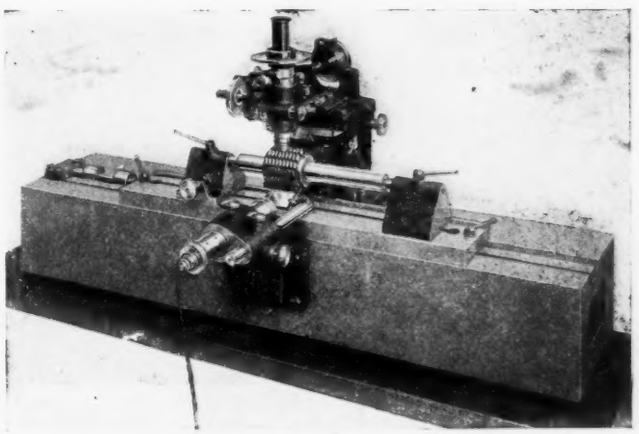
In regard to the welding of alloy steels, heat-treatment of the completed work will also meet many of the difficulties, but in some cases—notably where the steel approaches the "self-hardening type"—it may be necessary to prevent the rapid cooling of the work immediately after the welding operation itself by means of subsidiary heating. If this is done, self-hardening and consequent cracking are avoided and subsequent heat-treatment of the whole work restores the steel to the desired condition. It is, of course, very desirable in such cases that the metal of the weld itself should approximate in composition to that of the steel, and this is a condition which is not readily met except perhaps in the case of plain nickel steel as used for gears and shafting.

New Precision Measuring Machine

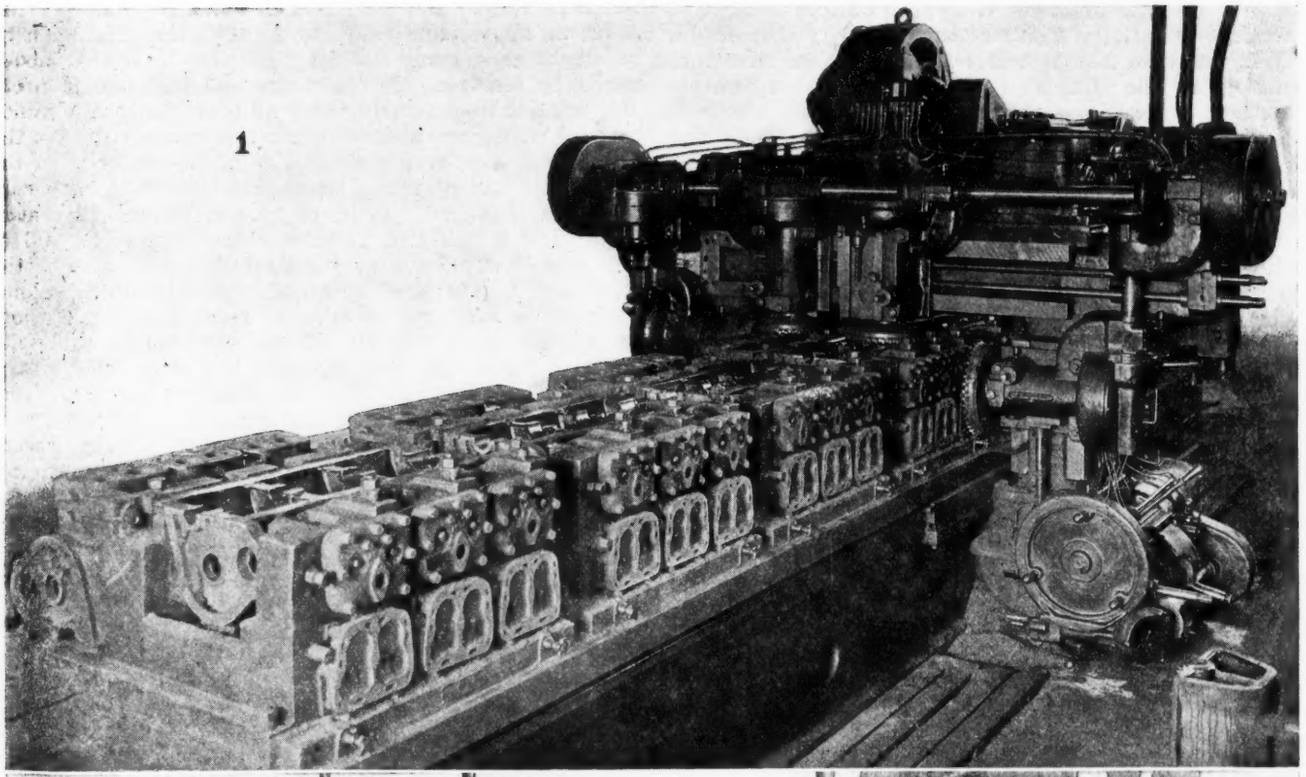
AN English measuring machine has been recently introduced to this country by the manufacturer, which employs a microscope and movable hair lines for reading. It is recommended for the measurement of screw thread tools, form tools, gages, threaded work, etc., being adapted for measuring both lengths and angles. The machine consists of two main parts—a bed carrying a table and the reading microscope with micrometer movement in two directions. There are two hairs in the microscope—one rotating with the outside tube and the other with the eyepiece. The angle between them is read by means of a graduated arc with vernier.

The method of operation is as follows. To measure a length, the specimen is clamped on the table and the table set by a rod. Then the first rod is removed and one which is longer than the first by the required amount is inserted. The deviation from the standard is read from the micrometer scale on the microscope. Angles are measured by the hairs. The movable cross hairs allow the setting to be made from any point on the specimen as the hairs may be set at any angle or parallel with any mark.

The machine will handle pieces up to 12 in. in length and 3 in. in diameter, and its weight is about 214 lb. It is a product of Alfred Herbert, Ltd.



New precision measuring machine



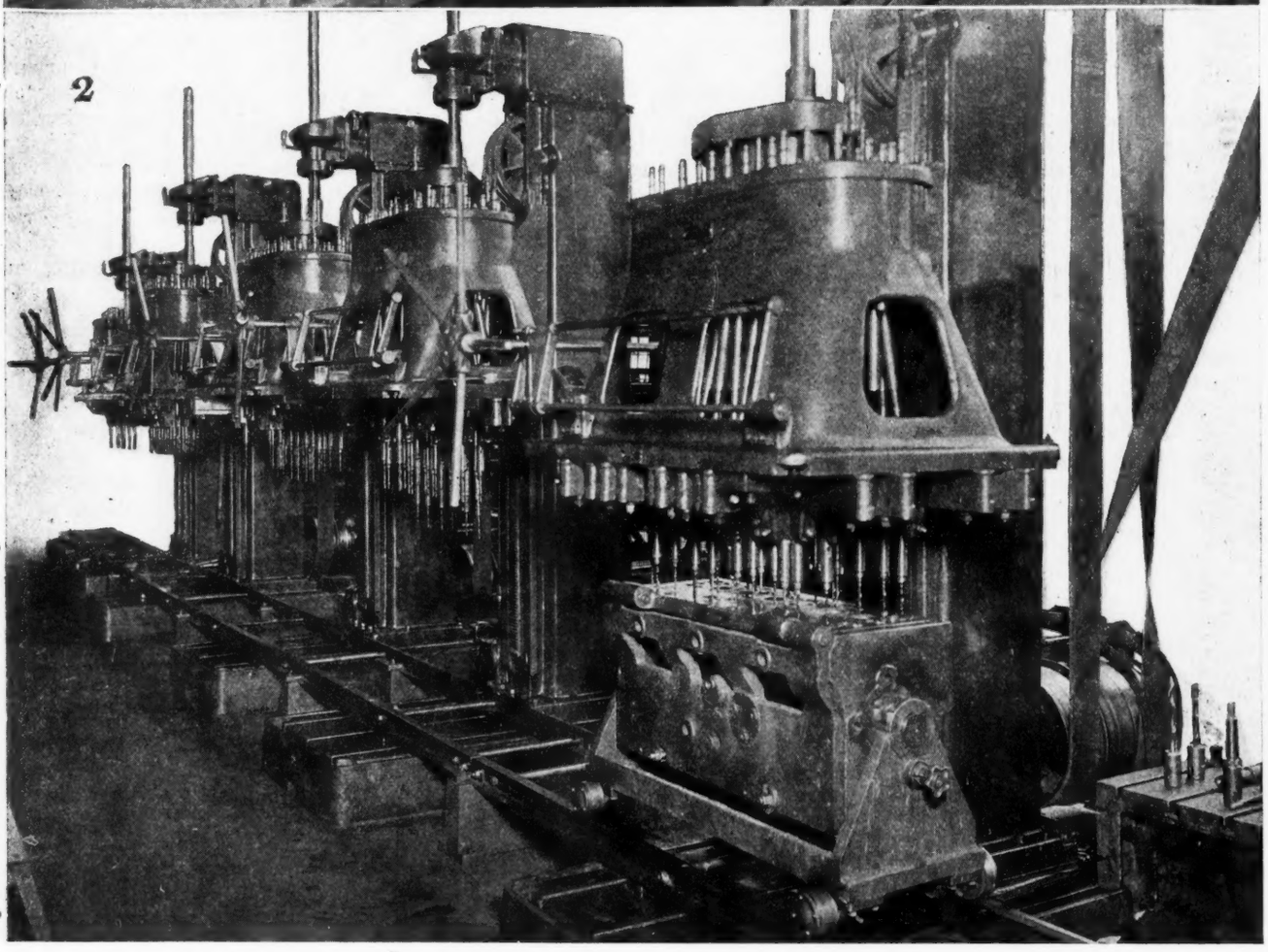


Fig. 1—Milling cylinder blocks and heads in Ingersoll continuous milling machine. ***Fig. 2—Six-unit railroad gang drill for drilling all holes in top, bottom and sides.***

Machining Operations on a Six-Cylinder and Crankcase Block

The practice of casting the top half of the crankcase integral with the cylinder block is more familiar in the case of four-cylinder production than in six-cylinder jobs. Its adoption for the latter has given rise to an interesting machining task, which is described in detail in this article.

By P. M. Heldt

THE practice of casting the top half of the crankcase integral with the cylinder block was first applied in connection with four-cylinder engines and has recently been adopted also for six-cylinder constructions. This makes the cylinder-crankcase block an unusually important part, requiring a very large amount of machine work done upon it, as it comprises the cylinder barrels, the crankshaft and camshaft bearings, the valve seats and valve stem guides and the oil distribution passages.

Besides this, a great deal of milling and drilling work has to be done on the block in preparation for the attachment of other parts. It is therefore necessary, in order to keep down the cost of manufacture, to have a particularly good line of machine tools through which this part passes. This tooling problem has been apparently well solved at the Wisconsin Motor Mfg. Co.'s plant for the cylinder-crankcase block of the new Liberty Six engine. In the following the successive operations on this part will be described.

The first operation on the block consists in milling the top and bottom faces in an Ingersoll horizontal milling machine. Five cylinder blocks and their cylinder heads (30 head castings in all) are milled at top and bottom in one operation. As a matter of fact, 10 cylinder blocks are strapped to the table of the machine at the same time, as well as 60 cylinder head castings, five cylinder blocks being finished on the top surface while the other five are finished on the bottom, the same with the cylinder head-castings, fifteen being milled off on the under side while the other fifteen have the bosses on top faced off. Fifty cylinder blocks and 150 head castings are completely finished in 9¾ hr. The jigs for this machine were designed in accordance with plans furnished by the Ingersoll Co. Three locating lugs for the first operation are cast onto the cylinder blocks and are filed up with the aid of a jig showing how the bores are running.

The second operation consists in drilling and reaming two locating holes in the bottom flange. These locating holes are used in connection with all the jigs used in subsequent operations. Next, two core holes in the cylinder blocks are drilled and reamed for the reception of Welsh plugs, one located at the rear end and the other on the left side. These Welsh plugs are disks of pressed steel, slightly concave, which are dipped in red lead, inserted into the reamed hole and then subjected to pressure on the convex side until they are nearly flat. Owing to the concaving of the disk, the sheared surface is not square to the plane thereof, but a sharp edge is presented which digs into the cast iron as the disk is flattened out. In this way a very secure closure is obtained.

The next operation consists in rough-boring the cylinder block in a six-spindle Moline Hole Hog, the operation being performed by means of a jig. Sixty castings are finished in 8¾ hr. Next, the tappet holes are drilled and the cylinder bores are chamfered at the lower end, which operations are performed in a Foote-Burt single spindle drill. Next comes the finish boring of the cylinder barrels in a six-spindle Moline Hole Hog, the amount of stock taken out in this operation being 0.040 in. on the diameter. This is a comparatively quick operation, more than 100 castings being finished per day.

After this operation a filler coat is applied to the cylinder blocks, and they then pass into a railroad gang drill set. This set consists of six drill presses arranged in a line, the first five of these being Natco multiple spindle drills and the sixth a Niles-Bement radial drill. The casting is placed in a tumbling box jig so that holes can be drilled in the top and bottom and the two sides of the cylinder block while passing through the gang drill. In the first drill nine holes are drilled on the top of the casting; in the second, twenty-seven holes on top; in the third, twenty-five holes on the right side; in the fourth, twenty-three holes in the bottom; in the fifth, twenty-nine holes in the bottom, while in the sixth drill, the radial, three holes in the left side are drilled and reamed. About fourteen castings pass through this railroad gang drill in 8¾ hr. One of the illustrations herewith shows the box jig opened, with the cylinder casting in place, and clearly shows the revolving feature, the two hand wheels at opposite ends serving to operate the indexing dowels.

Next the casting goes to another railroad gang drill, comprising two twelve-spindle Natcos. Here the valve and tappet guide holes are drilled and reamed. Line reaming of the valve and tappet guide holes is performed in a single spindle Barnes drill, this constituting the next operation on the casting. While the block is in the same machine, the valve seats are rough-bored, the tappet guide holes are counterbored from the top, the two breather holes and the oil gage hole are drilled and tapped and the valve guide holes are spot faced and chamfered.

Next all holes in the top, bottom and sides of the castings are tapped in an American radial drill. There are 92 of these holes, and they range in size from ¼ to 7/16 in. Thirty-two of the castings can be tapped in 8¾ hr.

Next comes a bench job, namely, the assembling of the four main bearing caps, and this is followed by milling off the ends of the casting in a Beaman & Smith milling machine. For this operation the casting is set on a jig, being located by the drilled and reamed location holes and held in position by means of four clamping straps. Notwithstanding the fact that the surfaces to be milled

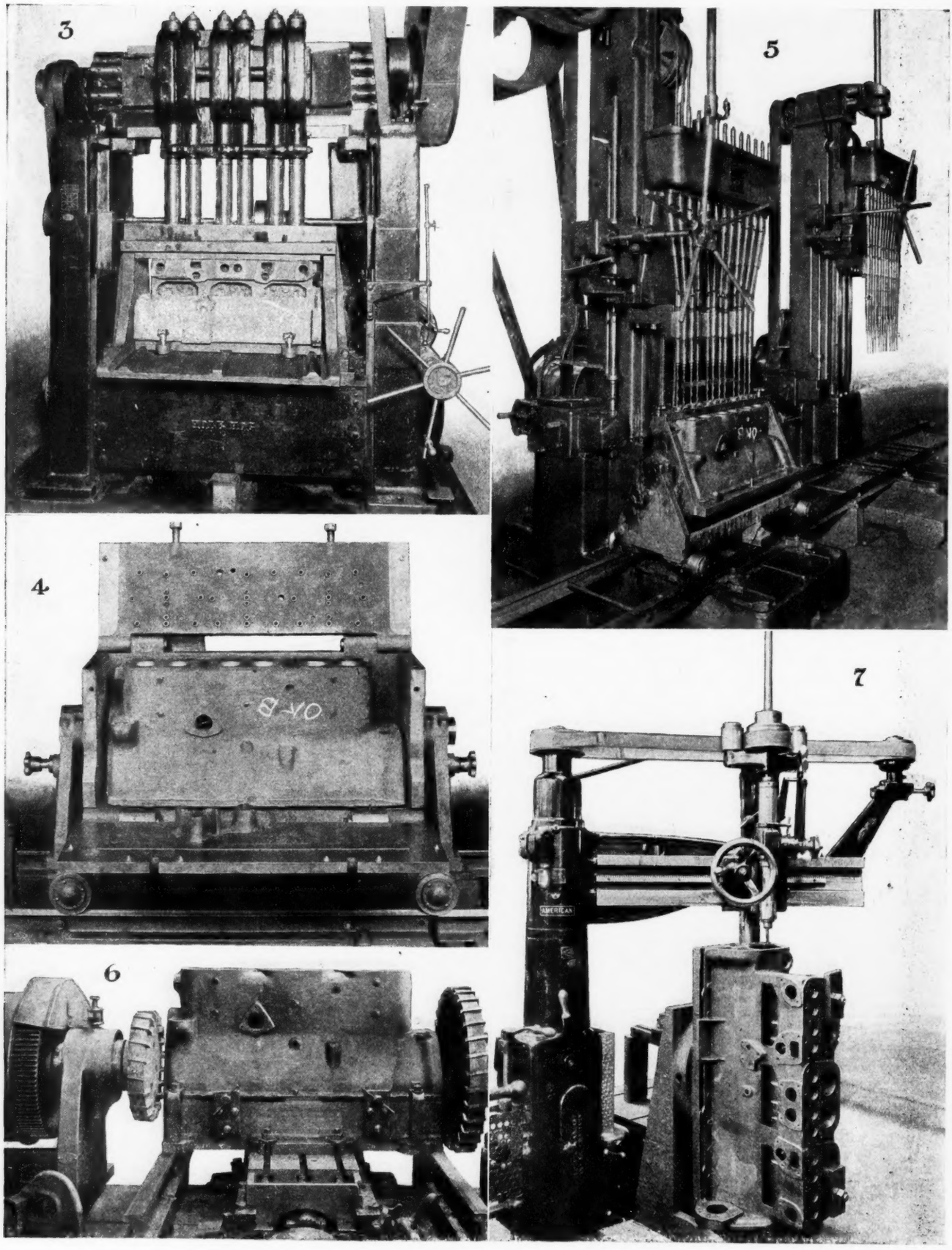
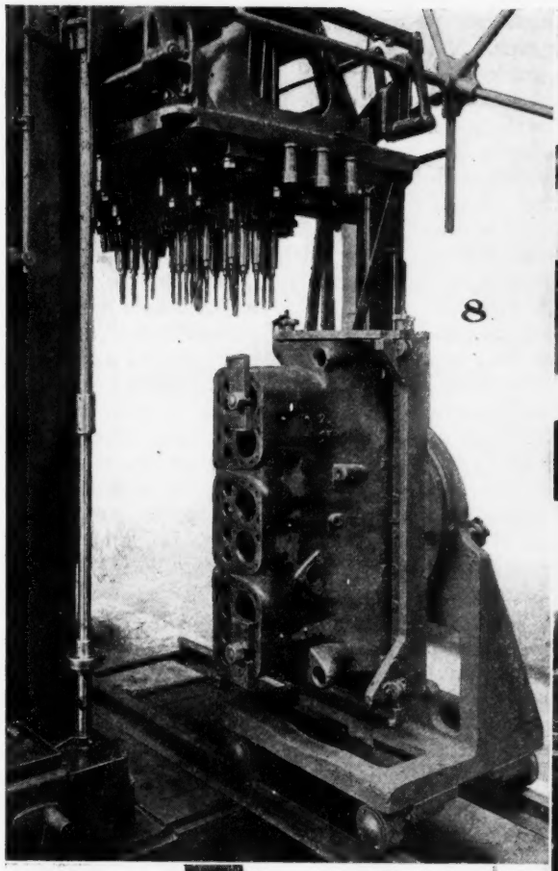
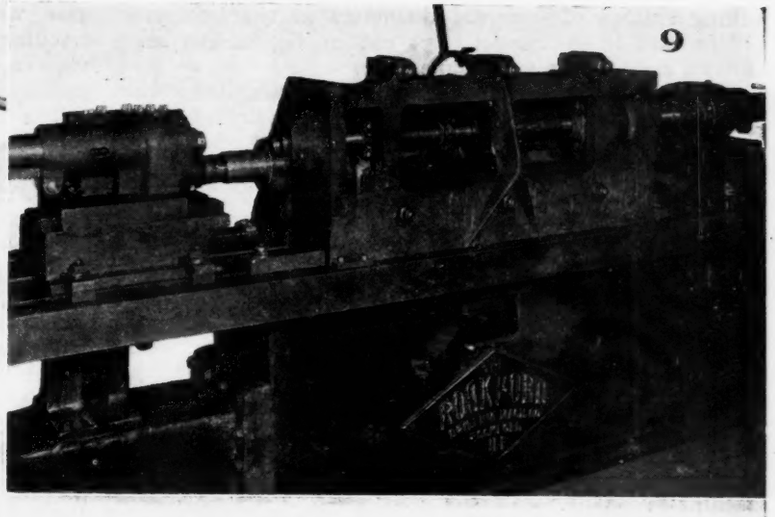
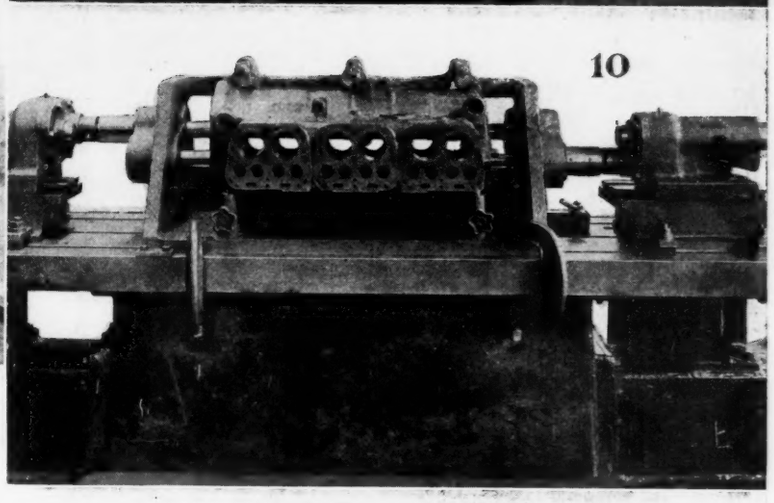
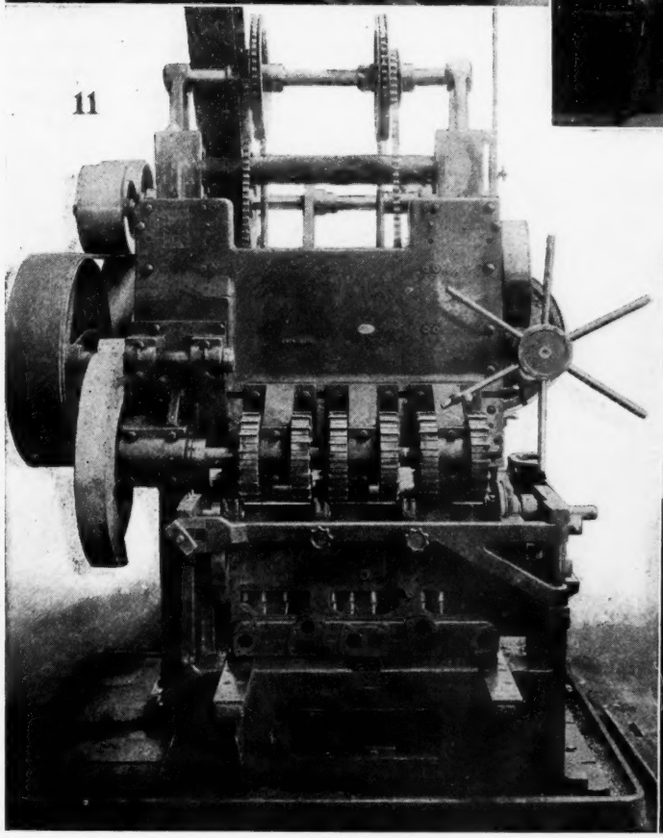


Fig. 3—Boring cylinders in six-spindle Moline Hole Hog. Fig. 4—Tumbling type of box jig used for operations in railroad gang drill. Fig. 5—Two-unit gang drill for operations on valve seats and valve stem guides. Fig. 6—Facing off end flanges in Beaman & Smith miller. Fig. 7—Reaming dowel hole in end flange in American radial drill









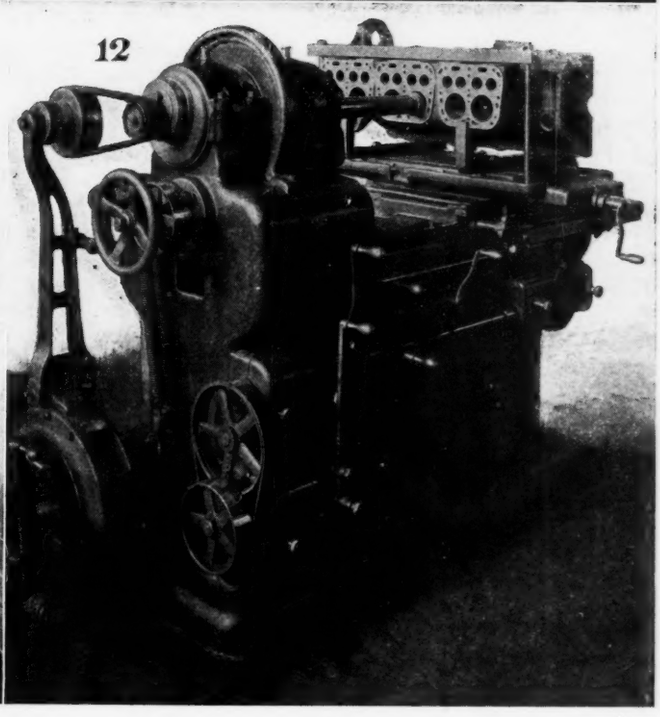


Fig. 8—*Drilling end flanges in Natco multiple spindle drill press by means of revolving jig. Fig.* 9—*Rough boring main and camshaft bearings in Rockford two-spindle boring machine. Fig.* 10—*Finish boring main and camshaft bearings (view from opposite side of machine). Fig.* 11—*Facing ends of main bearings in Moline Hole Hog miller. Fig.* 12—*Grinding cylinder bores in Heald grinder*

on opposite ends of the engine are staggered, by using milling cutters of different diameters at the two ends (12 in. and 18 in. respectively) cutting begins and ends at both ends at the same time.

The flanges at the ends of the casting having thus been finished, the casting is ready to have the ends drilled. This drilling operation is performed in a Natco multiple spindle drill with two sets of spindles, the work being held in a tumbling jig. Two dowel pin holes are drilled in the front end, and all holes in the front and rear ends are tapped in an American radial drill.

Next comes the boring of the crankshafts and camshaft bearings, in a Rockford two spindle horizontal boring machine. First, the bearings are rough cut, 0.05 in. below the finished diameter for both the crankshaft and camshaft bearings. Then a finish cut is taken, Kelly cutters are used, one for each bearing. To make it possible to use this style of boring cutter, the crankshaft main bearings are stepped in diameter from one end of the engine to the other. Twenty-two castings can be bored in this machine in 9¾ hr.

After the boring operation, the ends of the main bearings are faced off in a Moline Hole Hog milling machine, the operation being a straddle milling operation and six milling cutters being used. The work is held on a jig and the tool head is fed downwardly.

Upon the completion of this operation, the main bearing caps are removed, and four retainer screw holes are drilled and tapped in the bearing cap, sixteen holes in all.

Next follow a number of miscellaneous operations, including the milling of the generator pad, for which the casting is clamped on a table and fed past a milling cutter; and milling of the oil guard ring at the rear end of the casting, for which the casting is set on a table and fed straight up against the mill, a cutter of the same diameter as the oil guard ring being used.

The crankcase being of cast iron, it is impossible to cast the main oil distributing pipe in position, as is done in aluminum crankcases. Lugs are therefore cast in the case, which can be drilled for the insertion of the distributor pipe. This is done by means of a jig which provides a guide in front of each lug, the lug being located underneath the camshaft bearings.

The next operation consists in drilling six retainer screw holes in the case and then tapping them. The lugs for the oil distributor pipe are then reamed and the pipe is inserted. Then the end of the oil line is tapped and a pipe plug is screwed in. Four oil distributor holes, 5/16 in. in diameter, are then drilled, in a four-spindle drill by means of a jig setting in the main bearings. The next operation consists in drilling, facing and tapping the fan stud holes, which is done in a Ryerson radial drill, and, following this, two oil drain holes are drilled and tapped.

This brings the casting to the point where the cylinder barrels can be ground, which operation is performed in a Heald No. 65 grinder. From 0.006 to 0.008 in. of stock is removed in this operation—measured on the diameter—and a suction fan is used to remove the grinding dust. While the casting is in the grinder the bores are inspected by means of an inside micrometer, while later on they are inspected by means of gages. From 18 to 19 cylinder blocks are ground in 8¾ hr.

This completes the machining operations and the block is next washed in a hot solution of sal soda and oakite, with compressed air agitation at the bottom to remove all grease and dirt from the casting. Next a water test is made for oil tightness of the oil lines, the bearing outlets being plugged up with wood for this purpose.

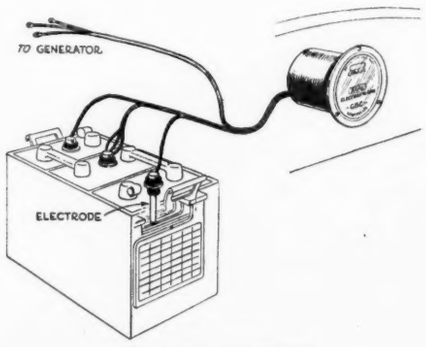
For this test the cylinder block is set on a rubber pad on a steel plate. The water inlet connection to the jacket is closed by a pad and water is admitted through the fan stud hole. A water pressure of about 40 lb. p. sq. in. is used. After this test, if no leaks develop, the casting goes to the final inspection floor. It is noteworthy that the valves are ground in the inspection department, to take account of possible inaccuracies in the valve guides.

Battery Protecting Device

STORAGE batteries used on automobiles suffer particularly from two causes—neglect to maintain the level of the electrolyte, due to the fact that the battery is out of sight and usually not very accessible; and overcharging. The electrolyte can be replenished only by hand and what is needed to ensure the necessary attention is an indicating device which shows the driver when the level in any cell has fallen to the danger point. Overcharging is best prevented by an automatic device acting on the generator in a suitable manner when this occurs.

An instrument designed to protect batteries against overcharging as well as lowness of electrolyte has been developed by the Battery Appliance Corp. and is known as the G. B. C. Controller. As shown in the accompanying illustrations, the device employs three auxiliary electrodes, which project through the cell caps so that the bottom of each electrode is just above the respective cell plate tops. Connections are provided from these electrodes to the dash instrument and connections from the latter to the generator. The dash instrument is essentially a combination of three electro-magnets which operate three signals: One marked "Low," another both "Low" and "Safe"; the third marked "Off.". This latter indicates whether the battery is being charged or not; the signal "Off" indicates reduced generator output, while a blank space in the same window indicates normal charging.

Overcharging results in excessive heating of the electrolyte and is prevented by a device influenced by the



G. B. C. controller

temperature rise. The middle electrode is hollow and contains a small thermostat. When the battery attains a temperature of 110 deg. Fahr. owing to overcharging an electric contact is closed, and the generator output is thereby automatically reduced.

Should the battery connections come loose, with a third brush regulated generator the voltage with an increase in engine speed would rise beyond the safe limit for the lamps. The G. B. C. Controller has a coil in the instrument on the dash, which controls the battery voltage and prevents it from becoming excessive when the battery connection is broken, thus preventing damage to lamp bulbs.

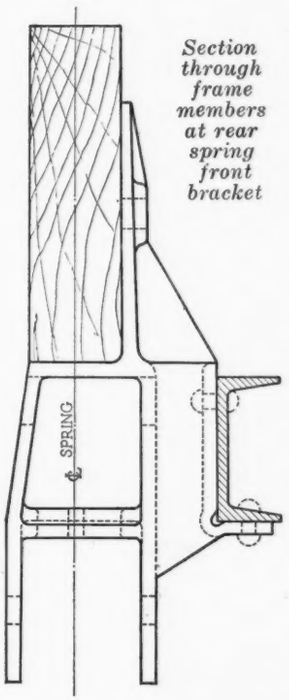
Two-Ton Truck Has Novel Frame Construction

The channel steel frame employed in the Lorain serves chiefly to hold the axles in alignment and the pay load is carried on wood sills fitted outside the steel members and is centered over rear springs. The advantage seen in this construction is a more resilient and firmer support for body.

A 2-TON truck is the first product of the recently organized Lorain Motor Truck Co., an Ohio corporation of which J. C. Hayes is president and C. Juergens chief engineer. The truck is composed of standard units, including a Wisconsin engine, Cotta transmission and Russel internal gear drive rear axle, but it includes also a number of original features in design. It is designed for dump body work and general hauling.

The pay load is practically centered over the rear springs, but is not carried on the steel frame. A 4-in. rolled channel frame is used, and above and to the outside of these channels are fitted two 2½ x 9 in. wood sills, which are said to afford a more resilient and firmer support for the body. The steel channel frame forms in a sense a subframe and serves mainly to hold the axles in alignment.

Notwithstanding the short wheelbase of 134 in. the truck has a length of loading space of 80 in. measured from the back of the cab to the center line of the rear axle. There is also an original feature in the method of mounting the powerplant,



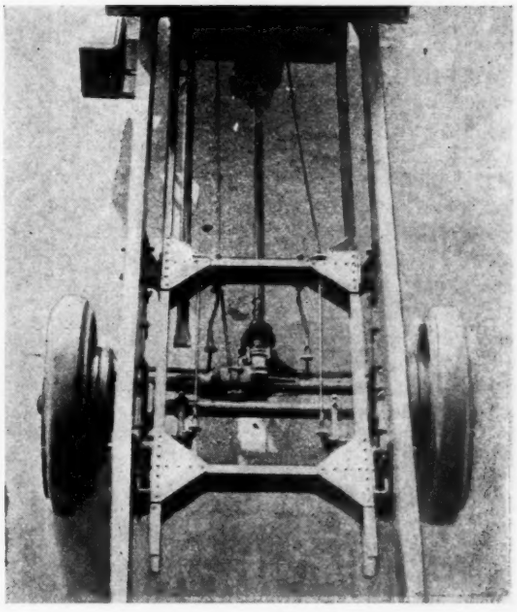
Section through frame members at rear spring front bracket

which has a three-point support. The front support is spherical and consists of a large oil-less impregnated wood bearing. The two rear supports also are impregnated wood, oil-less bearings of spherical shape, and with this method of support the motor is not strained by any weaving of the frame.

This truck has the Hotchkiss drive, and the springs, which are of the semi-elliptic type, are of such design that shackles, shackle bolts, etc., are eliminated. The rear ends of the springs bear against a wearing plate on the frame. The gasoline tank is mounted under the driver's seat, and can be pulled out like a drawer after removing four screws and disconnecting the gasoline line. The filler cap is on the outside of the cab, and the fuel supply can therefore be easily replenished. Oil-less bearings are used on the brakeshaft. The brake linkage is so designed that whether the truck is loaded or empty, the difference in the position of the brake pedals does not exceed ⅛ in.

In the design of this truck special attention has been paid to making all working parts as accessible as possible.

Cab and forward part of Lorain truck



Rear section of Lorain truck, showing frame and internal gear drive

A Twin Piston Diesel Engine Designed for Use in Aircraft

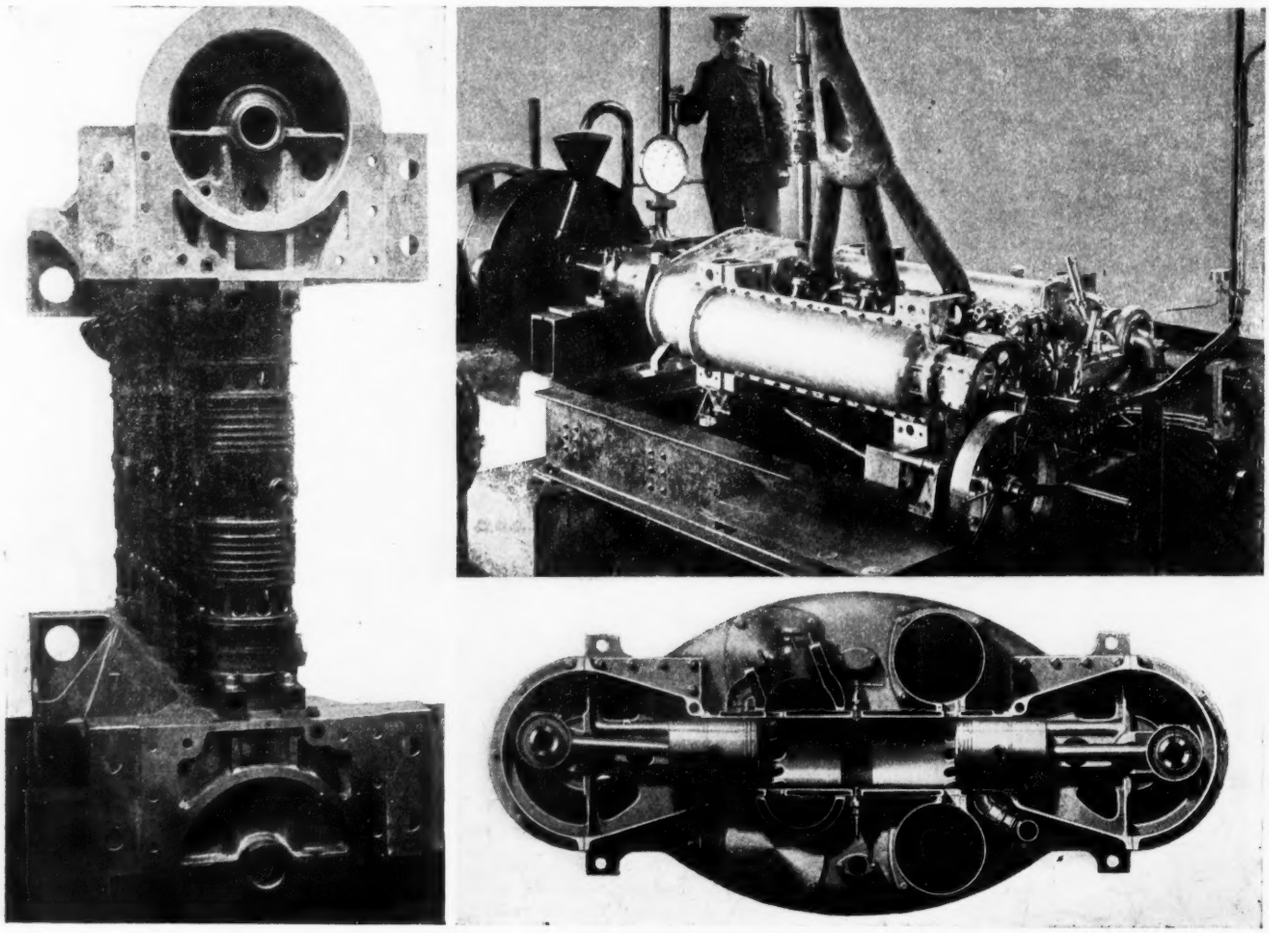
The present day internal combustion engine as applied to aircraft does not show the greatest efficiency possible. This article describes an attempt by a well-known German to overcome this by applying the Oechelhauser twin piston type Diesel engine design to an aircraft power plant.

THE Junkers monoplane, of which a sample has recently been flown in competition in this country, is one of the most radical designs and actually bristles with novelties. Prof. Junkers' internally braced, thick root wings have proved their efficiency in other aircraft, and in addition to the advantages offered by all-metal construction for flying in hot climates, it removes the only remaining hazard in flying, that of fire.

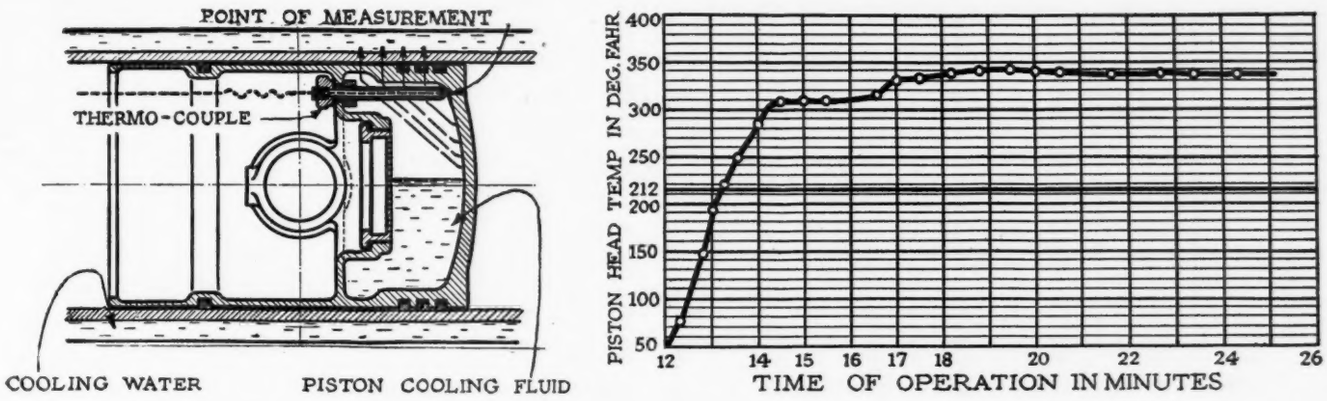
Before engaging in airplane work, Prof. Junkers developed a two-stroke cycle Diesel engine on the Oechelhauser opposed piston principle. During the war he got out designs for an experimental two-stroke aircraft engine of the Diesel type which offers possibilities of increased fuel economy and reduced fire danger. The six-cylinder Diesel aircraft engine, herewith illustrated, is the result of this development work. These photographs were brought to this country by Eric Hildesheim, a Danish engineer and air pilot.

The same as in the stationary Junkers engine, this Diesel engine for aircraft has a separate crankshaft at each end, the two ends being connected together by a train of gears. Inlet and exhaust ports are located at both ends of the working cylinders, and are uncovered by the pistons. The exhaust ports being somewhat farther from the end of the stroke are uncovered first. As soon as the inlet ports are uncovered, a scavenging charge of compressed air is forced through the cylinders by a pump, and in this way they are very completely emptied of burned gases.

It will be readily seen that in an engine of this design the reciprocating masses are in perfect balance, and as the



At the left is shown a vertical cylinder block of the Junkers-Diesel aircraft type. The regular horizontal type is shown on the test stand in the upper right-hand corner and below it is a section through one of the cylinders



The arrangement of the thermocouple for testing the piston cooling and the results

exhaust and inlet ports can be made of large area, and the cylinders are efficiently scavenged, it is possible to operate the Diesel aircraft engine as a high-speed engine of high mean effective pressure.

No difficulty is encountered in effectively cooling the cylinders, and the piston cooling problem has been solved in a rather ingenious manner. That portion of the piston back of the piston pin forms a closed chamber which is half filled with a cooling fluid introduced through a central opening in the wall toward the crankchamber, which opening is closed by a screw plug.

The reciprocating motion of the piston results in a violent pendulum action of this cooling fluid, which results in the transmission of heat from the piston head to the piston skirt and thence on to the water cooled cylinder walls. Very satisfactory results are said to have been obtained with this cooling method on tests, a thermocouple inserted in the piston with its thermo junction close to the piston head having shown a temperature rise of 270 deg. Fahr. in 15 min., 306 deg. Fahr. in 19 min., and no further rise thereafter.

Other German aircraft engineers are also working on the two-stroke cycle engine. Thus, the well-known pilot Hellmuth Hirth, who during the war was engaged in the development of giant aircraft, has been experimenting at Cannstadt with a two-stroke engine without scavenging or charge pump. The engine is said to be of 300-400 hp., and to weigh between 1.55 and 1.65 lb. per hp.

Cast Steel Wheels for Pneumatic Tired Trucks

A NEW design of steel wheel for pneumatic tired trucks has been developed by the Sivyer Steel Casting Co. The wheels are of the single disk type, with hubs cast integral, and the metal is refined electric furnace steel, heat-treated.

Among the distinctive features are four triangular shaped openings in the web. One of these openings is located over the valve slot and this permits of the use of the standard valve stem. This opening gives sufficient clearance above the valve stem to permit of the use of any standard air line connection when pumping the tire. The openings also serve to lighten the wheel and improve the appearance.

The valve slot is opened through the outside edge of the wheel, permitting of mounting or demounting the demountable rim and tire without lifting to get the valve stem into the slot.

The rim is channel section, reinforced by cross braces. The web is centrally located with respect to the rim. The hubs are cast integral with the wheels, for unit construction, and join the web in easy curves.

The disk type of construction is claimed to make it possible to obtain the necessary strength in combination with light weight. The 2-2½-ton truck wheels illustrated show a weight of 84 lb. for the front wheel and 104 lb. for the rear. Special attention has been paid to eliminate any features of design which would cause strains to be set up during the casting process.

Sivyer electric steel pneumatic tire truck wheel, 2-2½ ton rear, outside view

Sivyer electric steel pneumatic tire truck wheel, 2-2½ ton front

An Export Book

THE talks and discussions on export practices and prospects at the Seventh National Foreign Trade Convention, held in San Francisco last May, have been collected in a handsome 900-page volume. This book, which contains the views of many successful men, is for sale by the National Foreign Trade Council.

Safety and Production—the Small Plant Problem

Large factories are almost universally equipped with effective safety systems and methods. The result has been increased production and a reduction of accidents. The average small plant is far behind in this respect. This article tells how it may catch up and gain efficiency.

By C. A. Briggs

THE organization and methods for promoting safety in the large plants throughout the country are more or less standardized. Local conditions and plant personnel, of course, inject a few differing features, but in the main the large plants and mills of the country are united on the general policies of accident prevention work.

They have their safety engineer, their safety inspectors, plant committees, etc., and they have produced very gratifying results, many of them reporting accident reductions of 50 per cent and over.

It is the smaller plants that are lacking in the wonderful incentive that is back of a big, well conducted safety organization. The ceaseless publicity, the thorough inspection has done a good job in removing from the large industries the grosser hazards which, unhappily, are retained in many small plants.

Not a few of these accident possibilities are, too, direct production obstructionists, challenges to efficiency that will soon be met by the progressive mechanic trained in the school of safety.

A look out of the train window as one passes through most any small manufacturing town will show accident possibilities that a large plant with a safety organization would tolerate only long enough to get a blanket order to cover.

Ask some of these small plant officials if they have many accidents and they will say "No!" Then upon reflection they will admit that they have a few, while their records will show that they have accidents all too frequently. Compare these with the number of employees and it will show that in proportion their accidents are not only more frequent but of greater severity than those suffered by the large plants.

A very important part of the work of an effective safety organization is to keep an accurate record of all accidents as to cause, severity, the department where injury was sustained, etc. It is only by the intelligent use of such a record that accidents can be reduced or eliminated. A frequent reference to these statistics will show, for instance, whether machine injuries are being reduced or whether the injuries from ladders, scaffolds and platforms are larger than they should be.

Possessed of this information the safety man can concentrate his activities and direct his fire where the forces of the enemy seem to be rallying. This data is indispensable. It is analogous to the doctor's diagnosis, without which he cannot prescribe.

State inspectors, who cover many of the small plants in their visitation, say that it is very difficult to secure reliable information in such factories. They report, also, that little safety work is being done in these small plants.

Some of the hazards which one finds in these factories most frequently, and which are not always absent from the larger factories, is the "eccentric and easily out of order elevator," low shafting, unprotected flywheels, gears that yawn and beckon for flesh and blood, and machines without number "in the nude" that know not the protection of a guard or safety device.

How to correct this regrettable condition is the problem that these plants are facing to-day. A large number of them are not able to employ a safety engineer, and not having anyone directly responsible for the accident prevention work, they have not been represented at "safety rallies" or conventions to catch the spirit of the big movement that is making such an impression on the larger industries.

One solution of the problem that looks very reasonable, and one that has been successfully tried in a few places recently, is the touching of these plants by a part time safety engineer. In several cities a group of these smaller plants are being served by a consulting safety engineer. The plan is as follows: A number of plants agree to pay a proportionate share of the safety man's salary and he brings to them the knowledge and experience that he has gained with the large manufacturers, who seem to have had a monopoly of his services up to the present time.

Acting on his suggestions and adopting many of the methods of the larger plants, a real job is being done in a much neglected field.

One of the many difficulties that small industries have grappled with for many years is the safe and expeditious handling of material, machinery, etc. Now the slogan, "Do it electrically," is familiar, but it has not always been as easy to adopt as it is to say it.

Many plants are still compelled to use methods of handling material that have long been obsolete in other factories more favorably situated.

The accompanying photographs show some methods of handling material that have been abandoned in most plants. The long plank runway, Fig. 1, is a slow and hazardous way of "getting up in the world," and in slippery weather usually has to be abandoned.

Fig. 2 shows what can be expected from hand trucking plus poor roads. This method is very inefficient aside from the danger to the men from the load tipping as the wheels sink into the mud. The advent of the industrial truck. Fig. 3, within a few years has made a scene like this decidedly rare in most up-to-date plants.

The electric crane, Fig. 4, shown at work in the steel yard has many usages around the large plants and is always called into service for emergency work or when a real job presents itself that requires some pull.

The small electric scrap conveyor, Fig. 5, which shows

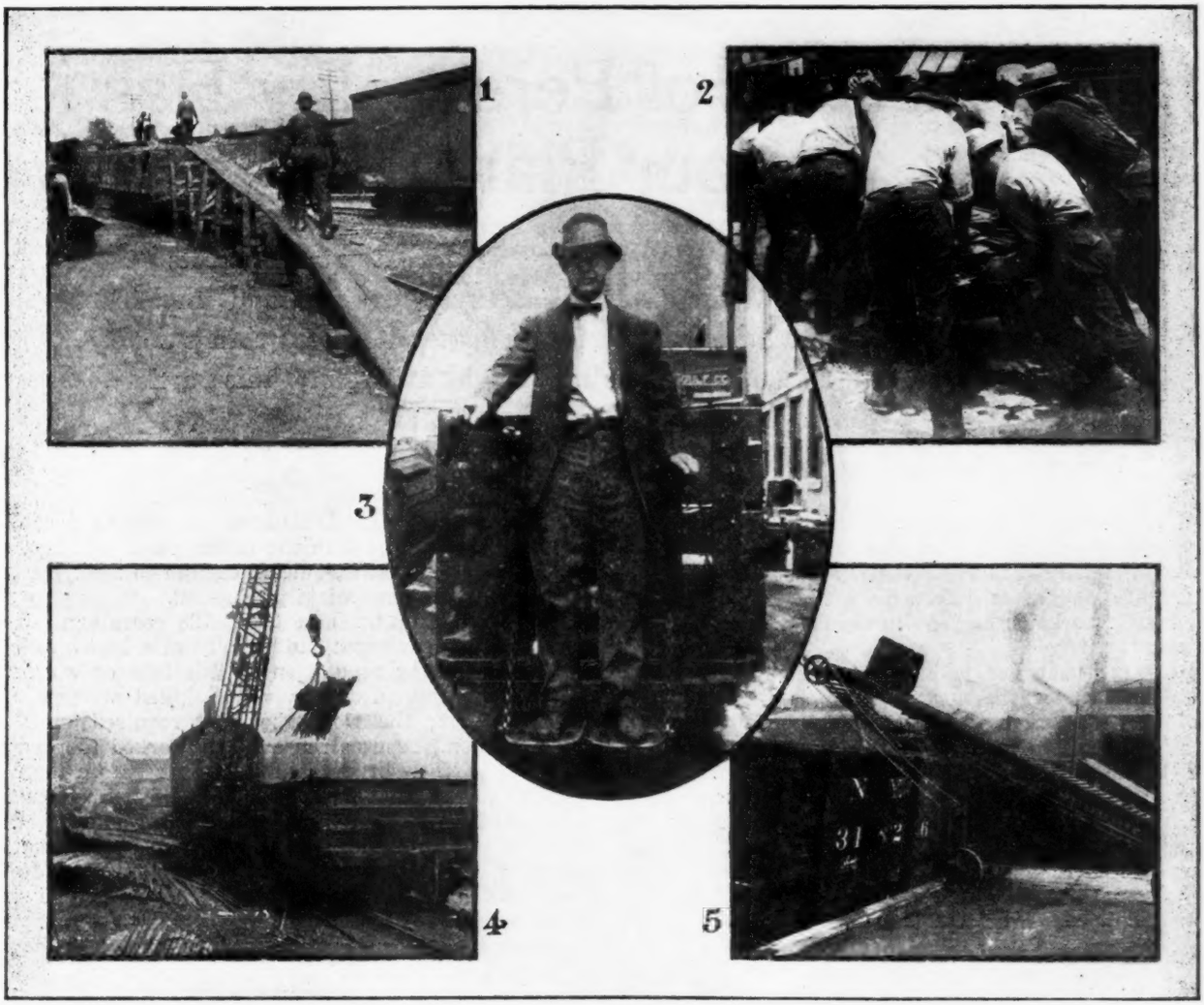


Fig. 1—A loading method that is decidedly obsolete these days. Unsafe and inefficient. Fig. 2—Hand trucking, plus poor roads, a very bad combination in any plant. Fig. 3—With a dependable driver, these little crafts are production allies. Fig. 4—Powerful and very efficient, these cranes are adapted to a variety of work. Fig. 5—This little electric conveyor is the "connecting link" between the scrap baler and car

a bale of scrap metal about to be dropped into the car, does the heavy work assigned to it with ease and dispatch. This is a development of the old system of loading with a wheel barrow and plank walkway.

Some of the loading methods shown in the lower group of photos are within reach of the small plants and doubtless are used, with variations, especially the electric truck, whose possibilities in the production program are indispensable.

To compete successfully with the larger manufacturers it has become increasingly necessary that the small plants adopt every possible economy. No doubt, from a production standpoint, this has been given considerable attention and they may be making a heroic effort to meet competition, but we are compelled to wonder, as we hear these reports and visit these places, if there is not an opportunity here on the human side of industry that they have neglected. Maybe a good "safety housecleaning" in some of these places would reduce their injury record, cut down their labor turnover and place them eventually on a par with the larger plants that have found it good to be "progressively safe."

Paris Public Transport System

THE contract under which the omnibus and street car services run in Paris expires at the end of the present year, and for eighteen months past the Municipal Council and the Conseil Général de la Seine have been deliberating on the conditions of exploitation in the future. At present there are forty-three motor omnibus lines in Paris and 117 street car lines, the great majority of these latter running between the interior of the city and the Department of the Seine. There are in all 2540 cars. These lines are controlled by six companies having a total capital of 420,900,000 francs. The exploitation of the public service is not generally remunerative and the motor omnibuses especially are running at a loss, despite the fact that the service is admirably organized and that the vehicles usually carry a full load. They are of the single-deck type. It is stated that a new form of omnibus will shortly be put into service capable of carrying a larger number of passengers, and this solution is evidently the only possible one at a time when motor fuel is so expensive and the shorter hours and higher wages have laid such heavy additional charges on the company. The Municipal Council is anxious to be relieved of its obligations.

What Kind of Personality Has Your Plant?

Every plant has a distinct "atmosphere," which may be termed its personality. Everyone knows the difference between pleasant and unpleasant personalities. Both have an effect in the matter of getting things done. A plant with an unusual personality is described in this article.

By Norman G. Shidle

MUCH effort is expended in industrial plants to get the workmen to feel themselves a part of the organization family. Usually this effort is begun in a definite way after defects in production or lack of effort among workmen has shown the need for some such "company spirit."

A personnel manager is hired and, though he is not called a cheer leader, the purpose of his work is not unlike that of such a functionary. But there is usually this difference: the college cheer leader attempts to arouse an active expression of enthusiasm among a group which has every reason to express enthusiasm. Their college spirit is the result of years and years of tradition, honored and loved customs, and a few years of active work and play in congenial surroundings. The cheer leader works upon a firm foundation which has been built up and strengthened gradually over a long period of years—and he always gets results.

The personnel manager, or industrial cheer leader, on the other hand, is too often expected to arouse enthusiasm for a company somewhat unfamiliar to many of its employees, and among men who frequently have but little about which to be enthusiastic. Few plants, especially in the automotive industry, have much tradition behind them; most of them are in the process of making tradition. Under such circumstances and upon such a basis the industrial cheer leader cannot be expected to produce a sincere expression of active enthusiasm within a short period of time. His task is, of course, infinitely more complex and important than that of the college cheer leader, while he is severely handicapped in addition by the lack of that favorable psychological background upon which the latter has to work.

Developing "Atmosphere"

The work of the personnel manager, backed up by the executives who shape the policy of the concern, can for some time be little more than seeing to it that the traditions which are being formed are such as will react to the ultimate benefit of the organization. Every relation between management and men establishes some tradition, has some effect upon the ultimate "atmosphere" of that plant. That abstract thing called "atmosphere" is difficult to analyze, but it is present in every plant; and it plays a large part in determining the kind of work and workmen within the plant.

A very old organization, for instance, which now manufactures automobiles, gives an illustration of what a healthy family atmosphere, grown up through a period of over a hundred years, means in the way of good workmanship, loyal employees, and low labor turnover. It does not, on the other hand, illustrate how such a condition may be brought about in the newer plant within a short length of time; that is, quickly enough to meet the pressing problems of immediate production.

This firm began business about 128 years ago. It then manufactured carriages and buggies of a high grade, and built up a strong reputation in this field of work. The workmen in the old days were all skilled artisans of the highest order; the work they did required great care and precision. And as the artisans worked they saw the fruits of their labor gradually growing before their eyes until finally the finished product of a beautiful carriage materialized. This was in the days when no one had ever heard of the term "labor turnover" and the workman was proud of his skill, proud of his product, and proud of his organization. Briefly, then, this shop was one which manufactured exceptionally fine products, where every workman had a part in producing and a share in the pride of the finished product.

An Early Start

Then came the advent of the horseless carriage, and gradually this concern got in step with the times and began producing automobiles and automobile bodies, specializing, however, on fine bodies, requiring exceptional skill in craftsmanship. In making this production change, the old working force was kept intact so far as possible, the advent of some machinists and a machine shop being the chief change so far as personnel was concerned.

Thus, even in going into car production, most of the old working force was retained, and with it a continuance of those traditions which had grown up with the plant and the organization since its start shortly after Revolutionary days. With this bulwark of tradition, the new men have to a large extent been successfully absorbed, the "atmosphere" has not changed radically in all these years at the plant of Brewster & Co., even though located in New York City.

The physical surroundings and working conditions, too, preserve the atmosphere of olden times which impresses even the casual visitor. Old prints of coaching days, views of Broadway when Fourteenth Street was "uptown," and similar interesting and reminiscence-producing views adorn the walls of the waiting room. A trip through the plant reveals the processes of actual car and body production to be interspersed with old stage coaches, stored in various parts of the shop. A few feet from a partially assembled Brewster car, the visitor finds the coach in which Lafayette rode while in this country in 1828, and nearby a forty-year-old Brewster buggy which is so light one can almost lift it single-handed.

Working here are men who have been in the organization for more than fifty years, still doing the same tasks, still taking the same pride in their fine artisanship. In this plant there is a distinct atmosphere—and it is one which impresses the visitor most favorably. It is to modern automobile manufacturing what "Ye Old English Chop House" is to the Broadway cabaret. It is one of those places which make us wonder whether progressive modern methods have really progressed or not.

It is difficult, in written words, to convey just what this atmosphere is; yet it is there very definitely; just as definitely as the atmosphere of intensive production is present in the Ford plant. Yet together with this atmosphere of the olden time with its skilled artisans, proud of their work, the organization has kept pace with modern thought and policy in the matters of working conditions and wages. Faithful service and vigorous initiative are rewarded, this policy playing its very important part in producing favorable labor conditions. The chief difficulty experienced in regard to labor is to get young men of sufficient skill to take the places of the older men who cannot go on forever. Labor turnover averages between 5 and 7 per cent a month—and this under the industrial conditions of a large manufacturing center.

While the wages and working conditions here are equal, as noted before, to those of any similar modern plant, the labor turnover is about one-third of that in similar plants operating in similar urban localities. The only difference is the "atmosphere," which tends to warrant the assumption that "atmosphere," "spirit," or whatever it may be called, has a definite effect even though it cannot be caught, counted or handled.

It is worth-while building up in any plant an atmosphere that will be favorable to an honest and sincere family feeling. This cannot be done by means of a few speeches or pamphlets; it can be done only over a period of years and will be the result of a multitude of little events and happenings from day to day. Every plant has some "atmosphere"; it is important that it be one which causes a favorable psychological reaction on the part of workmen. The example cited above simply illustrates what has happened in a particular case; something entirely different in the way of "atmosphere" might happen next door and be equally effective. The "atmosphere" of a plant may be said to be its personality; and we all of us know the difference between pleasant and unpleasant personalities—and the different effects which they produce in the way of getting things done.

Standard Radius Lathe and Planer Tool

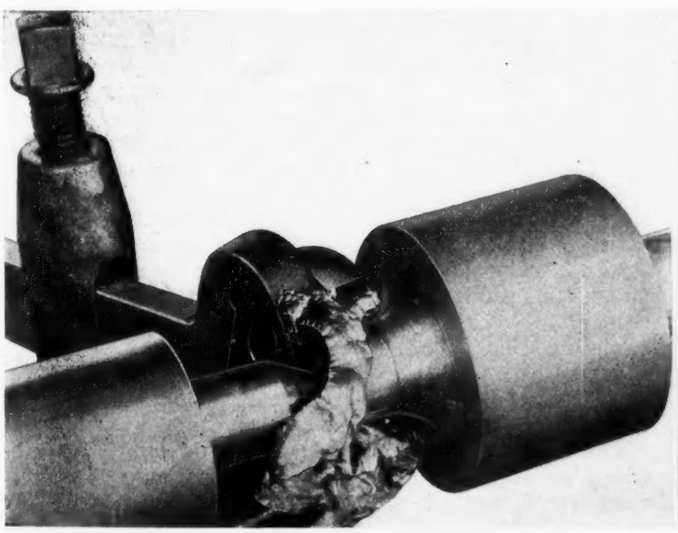
AT the present time the usual practice in turning inner or outer radii in machine shops is to make a special tool for each job, which is tedious and generally inaccurate. Such tools are not made to be reground, and if they survive a job they are thrown away, because regrinding them takes about as long as making a new tool.

We show herewith a tool designed to facilitate this work. It comprises a tool holder and a number of cutters, the latter being substantially of disk form, with a central shank on one side by which the cutter is clamped in the holder. As shown in one of the illustrations, each set comprises cutters for from 1/16 to 1 in., convex and concave radii. Each set also contains a 60 degree cutter for cutting threads, as well as a cutting-off tool. The other illustration shows one of the convex cutters in use on a lathe.

In grinding these cutters, they must be held so the cutting face intersects the axis of the disk, in which case the cutting edge will always retain the same curvature, that is, remain accurate. The cutters can be reground repeatedly and are long-lived.

Each set includes the patented holder shown in the illustration, the standard shank size of which is ½x1⅛x 6⅝ in. The operator inserts the shank of the cutter into the large opening of the holder and then clamps it firmly in place by means of the clamp and lock screw. A wrench also accompanies each set. The cutters, holder and wrench are neatly mounted. The set is made by the R. G. Smith Tool & Mfg. Co.

A GERMAN publication gives the following aviation casualties for the German service during the war: 1962 officers and men killed at home fields; 4878 officers and men killed at the front; 2227 officers and men wounded at home fields; 5123 officers and men wounded at the front.



Smith radius cutting tool in use

Tool holder, cutter and wrench of Smith cutting tools

The Problem of Automotive Traffic in the Cities

Congestion of traffic in the thickly populated sections is becoming a serious sales resistant. In New York one hears of men who are selling their cars because of driving and housing difficulties. Sales resistance will be lessened when this problem is solved, so it becomes an industry problem.

By E. P. Goodrich*

DUE to the great growth in street traffic it has been found necessary in modern times to limit it in various ways. One-way streets have proven themselves exceedingly effective and are growing rapidly in use in American cities. Segregation is another device to which resort has been made, the best modern example being that found in the Borough of Manhattan.

Private rights of way have long been the rule for trunk line railroads, although the first railroads were built along the public highways in England and many in this country occupy public streets where they pass through communities. Street railroad corporations have generally occupied the public streets, although in some instances, notably in St. Louis, they have acquired more or less extensive private rights of way. What is somewhat analogous to the latter practice but in this instance proposed for automobiles has been suggested in Los Angeles, where a special high-speed motor truck highway has been designed to connect Los Angeles City with its harbor, the idea being that it would be set aside almost exclusively for the use of commercial vehicles operated between the destinations mentioned. Modern practice is leading to the diversions of steam railroads outside the built-up portions of cities through which they were originally permitted and often urged to pass when they were constructed.

Largely through commercial initiative, special facilities have been provided as demands arose in the way of road houses, garages and repair shops, while civil authorities have assumed heavy burdens in the way of paving betterments, the widening of thoroughfares, the strengthening of bridges, the enlargement of street intersections, and in a few cases in the elimination of grade crossings. A notable example of the latter variety is seen in the Park Avenue bridge and the viaduct around the Grand Central station in New York, which created a through thoroughfare of Park Avenue largely to relieve the congested traffic on Fifth Avenue.

Turning to the special urban problems, they may be subdivided in character as to whether they apply principally to

(1) passenger, or
(2) commercial vehicles,

and in each instance as to the conditions which surround the vehicles when

(a) moving,
(b) standing.

Marked progress has been made in improving the surface conditions and the supporting power of pavements and while, as stated before the Cleveland City Planning Conference, it is estimated that it will cost $1,000,000 for each inch of additional thickness of pavement foundations in the main streets of New York City, the probabilities are that marked increases in this direction will take place as fast as the pavements are relaid to make them conform to the present ordinance in weight of vehicles. The character of pavement surface has been greatly improved during the last decade, largely to afford more comfort to riders in passenger vehicles, and future progress will doubtless continue in the same direction. Such matters interest city planners from the fact that these betterments cost increasing amounts of money and the economics of the problems always limit the careful designer.

Note has been made of the growth in street width which has taken place in the past. This experience evidently points to provision for even greater future accommodations to take care of the present maximum size of vehicles in their greatly augmented future numbers. Before it is possible to determine the proper width of future streets it is necessary to consider the future operating conditions. Experience derived from traffic counts has shown that one vehicle per foot of width of roadway per minute is the present day maximum under normal city conditions where intersecting streets occur at short intervals and where traffic is permitted to operate in both directions on main and cross streets, subject only to normal police control.

The creation of one-way streets (which it has been noted is growing rapidly) is believed from careful observation to provide for fully double this unit quantity of travel, while the more radical innovation in street traffic control (devised by the writer and briefly referred to by Mr. Fox before the Cleveland Conference) is believed will add at least another equal increment to the potential traffic of existing streets. This control device may be explained briefly by citing the conditions which would exist were companies of soldiers with considerable intervals between each company to be marched up and down any street. Obviously ample opportunity would exist for those using the cross streets to turn into the thoroughfare through which the soldiers were marching, joining companies marching in either direction as was desired through the gaps between companies and when the gaps coincided at any street intersection, cross traffic could occur without impediment.

The introduction of this device would necessitate the education of traffic officers to a new and somewhat more complicated method of handling travel, because traffic in two directions will not be interrupted simultaneously except under special conditions. In order to make the

*Paper read at the Twelfth National Conference on City Planning, extracted.

device effective it will probably be necessary to install automatic signals at frequent intervals which will be operated from some central synchronizing station very much as block signals are now automatically operated on the railroads, except that in lieu of the scheme of central control here described, the forward train automatically indicates when it has traveled a specified distance beyond each signal. It may then be stated that by the introduction of improved traffic regulations, existing streets may be employed to at least three times their present capacity, and city planners should take this into account in designing the major street systems of old and new communities.

In order to provide for changes of use, the elastic street has received well deserved study and its principles have been repeatedly presented before and are well known to the members of the National City Planning Conference. Thus far the elasticity has been horizontal. There is no reason, however, to preclude vertical elasticity for a further segregation of street use in existing completed districts. Steps in this direction have already been taken in the construction of rapid transit lines upon elevated structures and in subways, thus removing one of the principal elements of street traffic. In a few instances, double level vehicle streets have been constructed, generally in connection with the erection of viaduct being constructed through a street in a valley, but in such manner as not to preclude a continuation of its use for traffic purposes.

Examples of this kind are the Riverside Viaduct where it crosses the Manhattan Valley in Manhattan and the new Twelfth Street Traffic Way in Kansas City. More extensive plans for double level streets were designed in connection with the New York Central West Side Improvement, presented to but not yet officially approved by the Board of Estimate of New York City, while still more ambitious projects of the same nature have been put forward from time to time for the creation of a two-level roadway through the full length of West Street, as it runs parallel and adjacent to the Hudson River in Manhattan.

A suggestion of the traffic problem at Fifth Avenue and Forty-second Street, New York

Suggestions have also been made for the separation of pedestrian from vehicular travel by the construction of overhead sidewalks. These have been proposed, for example, for installations in the side streets leading from several of the Hudson River ferries up to Broadway, Manhattan, and investigation showed them to be entirely feasible—in fact, the economics of the case is clearly in their favor. Had it not been for the relatively short distances effected by the Oxford Avenue sidewalk arcade in Philadelphia (costs of condemnation for which amounted to $23 per square foot) it would have been cheaper to erect an overhead sidewalk in the existing street and widen the roadway beneath the sidewalk to exactly the same dimensions as that finally employed.

The inconvenience, however, to pedestrians having to mount the overhead sidewalk in this instance would probably have created insurmountable objections at the time the widening was made. With such overhead structures costing in the vicinity of $3 per square foot, it is evident that such widenings as that of Avery Street in Boston (where the acquisition of real estate costs $20 per square foot); Livingston Street, Brooklyn (with a $15 per square foot cost) and Elm Street, New York (with a $37 cost), an economical limit exists beyond which it is inadvisable to make street widenings or propose wider thoroughfares, double-level streets being considered in lieu thereof.

Experience in urban traffic discloses the fact that the greatest difficulties are encountered at intersections. The Illinois Highway law, for example, takes account of the fact that vehicles which turn from one street into another must do so at a greatly reduced speed compared with that under which they can operate uniformly along a thoroughfare. This reduced speed involves increased density in accordance with well-known physical laws, which, in the case of traffic, instantly reacts to accentuate congestion.

Such separation of grades, as has been advocated at the intersection of Fifth Avenue and Forty-second Streets, New York City, are heroic endeavors to relieve this difficulty. Such projects are evidently feasible only where traffic is extremely heavy so that the cost is warranted. The simplest possible means of somewhat alleviating the difficulty is by minor enlargements of the roadway space at intersections. Work in this direction has been carried out in various cities, a late modification in New York, for example, changing the ordinance relative to the radius of curvature of the curb at street intersections, enlarging it from 6 ft. to 12 ft. Experience shows that this has resulted in a material improvement, but that considerable betterments are still possible. With curves of still larger radius it would be necessary to cut across the corners of corner lots and to shift pedestrian crossing points away from the street lines which are continuations of the regular sidewalk space. A logical extension of this scheme is the establishment of stanchions along considerable sections of the curved part of the curb near the diagonal of the street intersection.

An extension of the scheme in another direction is toward a considerable enlargement of the intersection to such an extent that a monument site or even an area large enough to contain a building is planned in the center of the intersection, traffic being carried around such central space by what has come to be known as "the rotary traffic scheme." When the central space becomes large enough for a building site it is generally considered, by those who have studied the problem, that the advantageous position thus occupied will create values which are more than sufficient to pay for the costs of altering even some congested existing conditions.

Were this suggestion to be carried out logically in connection with a street system wherein blocks are only 200 to 300 ft. long, the constant twist of the thoroughfare would tend to an unsightly condition and create and produce increased traffic difficulties. Instead of this scheme

the logical solution would seem to be a system of streets in pairs with small blocks between the members of each couple (say 80 ft.), with larger blocks between the pairs. The traffic of each member of a pair would be in a single direction in each instance, with rotary traffic thus produced around each small block. This principle can obviously be applied to advantage only as a substitute for main thoroughfares, the streets in the minor system being carried across the pairs in accordance with the present method.

As stated, this scheme of street arrangement assumes one direction streets for the two parts of each pair constituting the revised main thoroughfare. Furthermore it makes very easy and almost automatic even with present methods of traffic regulation the suggested scheme described above and likened to the marching of companies of soldiers.

This scheme is also particularly applicable to streets designed to carry street railroad tracks, the lines in each direction being placed respectively on the two members of each pair. With such an arrangement it is suggested that the street railroad tracks can be placed on the right-hand side of the street next to the curb so as to assist and simplify the loading and unloading of passengers, but parking of vehicles would then be done only on the left-hand side of the street, discharging and taking on of vehicle passengers being on the right-hand side, and taking place only between cars. Difficulties will be encountered in the loading and unloading of freight—office furniture and supplies and similar merchandise—if this location of street car tracks is adopted. In consequence it may not be workable except on streets which are occupied almost exclusively for office and retail mercantile business, in connection with which side or rear entrances are available in the majority of instances.

The practice already initiated and mentioned above of creating cut-off and detour streets for the use of through traffic should be extended, while the introduction of new diagonals where conditions warrant will also result in marked benefit. The so-called diagonal street in Newark designed to closely parallel the Passaic River and connect Market and Broad streets so as to eliminate much traffic which turns from one street to the other at that intersection was computed would pay interest and maintenance costs and amortize the whole investment in somewhat less than five years solely from savings in gasoline and tire consumption and wear and tear of vehicles, both automobile and wagons, and on harness, and in saving of time of drivers and passengers.

The marked reduction shown in the traffic on Broad Street, Philadelphia, is directly traced to the opening up of the Parkway. A careful study as to the possibilities of the introduction of diagonals connecting traffic centers and the creation of detours for the benefit of through traffic evidently contains great possibilities for future city replanning.

Another possibility of improvement is in the establishment of special, restricted rights-of-way for different classes of vehicles wherever traffic is sufficiently heavy. In connection with the creation of interurban motor transportation, the establishment of freight stations near the centers of distribution like those now established by some trunk lines and by interurban electric roads is a natural next step. Leading to such automobile freight stations should be established special rights-of-way extending some distance toward the city confines. The suggestion of such an automobile freight thoroughfare in Cincinnati over the bed of the canal (when abandoned) is in direct line with this idea and is to be considered highly. A similar segregation of travel may eventually be found necessary to accommodate motor bus lines.

The suggestion may also be submitted of a further elimination of street railroad tracks from city streets, better to accommodate other varieties of street travel. The great congestion which is being developed on Fifth Avenue in New York City, due to the large increase in motor buses, points to a similar need with respect to this type of conveyance, a limitation being placed upon the number of buses which may be operated in connection with general traffic. While motor buses are much more elastic than are street cars (restricted as they are to permanent rail lines), and while they also possess many public advantages, it cannot be admitted that they should be permitted to increase to an unlimited extent.

The suggestion has already been presented before previous national conferences that main thoroughfares should be designed in threes, one primarily for passenger transportation, the second primarily for commercial use, while the third is for miscellaneous traffic. The extension of this suggestion to include the substitution for the last type of street, of thoroughfares in pairs, is only a minor modification.

Turning to the problems involved by standing vehicles, the first which logically presents itself is that in connection with vehicles which are waiting to make a turn at street intersections. Practice as to this item differs in various cities. In some instances waiting vehicles occupy the center line of the street, while in some others (whether the latter area is occupied by railroad tracks or not) waiting vehicles are required to stand next to the right-hand curb, parking being prohibited in the district thus evolved with the point in view of accommodating such vehicles as are desirous of making a turn.

With this idea in mind, and also in many instances to provide for safety zones for street car passengers waiting to board cars, the roadways have been widened. In all cases thus far encountered this widening has resulted simply in a narrowing of the sidewalk. This narrowing is obviously a disadvantage, since it occurs where pedestrian street traffic is generally most congested. To obviate it, street designs should be made with street lines set back at the corners. Obviously this action will not be as necessary if street corners are cut off and central figures established at the intersection in connection with the above described rotary traffic scheme or when main thoroughfares are laid out in pairs of closely adjacent one-way thoroughfares.

The parking of vehicles is probably the most pressing question now before urban authorities in connection with automobile traffic problems. This question involves the whole theory of the use of streets. The laws as to street use have generally been interpreted as meaning that streets are set aside primarily for transit. Thus they may not generally be used for the erection of even temporary buildings, while their use by vehicles for the loading and unloading of freight have brought out differences of opinion. Streets are designed for the use of the whole public and wherever they are preempted for private use the rights of the general public are thereby more or less infringed.

Residence streets are almost exclusively used by and for the owners of the adjacent property. Generally the original street opening and construction and in many instances repavings (at least in part) have been directly assessed on abutting property. Under such circumstances the use of the street for the parking of vehicles belonging to residents or those who visit them takes these plans on property which, while it belongs to the public in general, has been made for and is devoted almost exclusively to the use of adjacent property owners.

On heavy traffic, business streets, on the other hand, the rights of the general traveling public are obviously paramount, and the rights involved in parking vehicles along them are not as clear. In many instances ordinances have

been passed permitting property owners or the police to establish zones in which all parking is prohibited. A vehicle owner who drives into the mercantile district with the desire of spending a greater or less amount of time visiting shops or offices can in few instances park his car immediately in front of the latter because of the great number who desire to do so. Under such circumstances the car is occupying space primarily for the driver's own convenience and generally only in a minute sense to the advantage of the adjacent property owner. A marked tendency now exists toward doing away with this privilege, almost every city having passed ordinances limiting the time of such parking, and in many cases precluding it entirely even when the vehicles are constantly accompanied by a driver who can move them to accommodate traffic needs.

Another suggestion of the traffic problem at Fifth Avenue and Forty-second Street, looking east on Forty-second Street

Clubs have established parking accommodations on adjacent private property for the use of club members. Railroads have provided space for waiting taxicabs on their grounds, sometimes on the surface as in connection with the Lehigh Valley Station in Buffalo or below the surface as is the case at the Pennsylvania and New York Central Stations in New York; while one department store in New York is reported to be contemplating the acquisition of private property where its patrons can leave their cars after discharge of passengers at the store entrance, and from which the car can be called by the system of electric signals like those so widely used by theaters and opera houses. The Waldorf in New York constructed a private street (which is largely used by standing vehicles) for the accommodation of its patrons; a few New York theaters have followed the same course.

The tentative designs for the public auditorium at Buffalo contemplate large areas for the parking of vehicles and the discharge and picking up of passengers under the structure. Again, commercial interests have established large garages and parking areas on private property where owners can leave their cars for extended periods and where they are guarded by attendants provided by the garage owners. This seems to be the only logical solution of this problem, and a prophecy is hazarded that eventually no vehicles will be permitted to park except directly in front of property owners by those occupying the car or with whom they desire to do business, and then only for very short periods, depending upon the traffic needs of the streets in question.

In some instances municipalities have arranged for the parking of vehicles on publicly owned land, as is the case in Cleveland, or upon large street spaces in the form of plazas in Detroit. This seems a use of public property for private benefit in contravention of the spirit of the law and is to be discouraged.

The amount of space required by vehicles waiting for patrons of railroad stations, theaters and hotels is considerable, but it would seem that the provision of private property for the parking of vehicles even in this instance is incumbent upon the railroad, the theater or the hotel and the course already outlined should be required.

Just as accommodations have been provided for passengers, so a similar tendency seems to exist with reference to those used for commercial purposes. The Wanamaker store in New York, for example, has provided loading space within its building where its vans and delivery wagons load and unload and practically all modern railroad freight stations being designed similarly. In many instances a two-level arrangement is employed, railroad cars being on an upper level and vehicles loading and unloading or waiting to do so are assigned space immediately below, at street grade. Such is the arrangement of the new freight station in Chicago, and this scheme can and should be adopted for interurban trolley or automobile freight stations as well.

These several studies point to the following conclusions with reference to the planning of cities in their relation to the automobile problem:

(1) Street traffic will increase greatly in amount and probably also in size and weight of vehicle.

(2) Regulations will always largely control traffic matters and cities should be designed with this idea in mind.

(3) Streets should be designed with heavier pavements than at present.

(4) The elastic principle should be applied to the determination of the width of all thoroughfares, but streets wider than those now contemplated can be secured most economically by the use of several levels and the segregation of different kinds of travel upon them, so that street car traffic may be carried in subways or on elevated structures and provisions be made for overhead sidewalks and similar features.

(5) Special traffic studies should be made to determine the most advantageous location for cut-offs and detours (radial and circumferential streets) and whenever found economically feasible they should be introduced into existing systems and as far as possible planned for any future developments.

(6) In connection with the handling of freight by automobile truck, private rights of way should be arranged by the trucking interests to reach freight stations located near the centers of distribution.

(7) In connection with special rights of way and in other places where traffic conditions warrant, separation of grades at crossings is to be considered.

(8) Of all intersections, studies should be made of the economical possibilities of enlargement by cutting off

(*Continued on page* 733)

The Right Kind of an Export Service Station

Frankly this story is not a new one, but it is worth telling because it is novel. It was written many months ago and was sent to this country by one of the men who aided in establishing the system, but he died on shipboard and the original article was lost. We believe that this service system for cars sent to a foreign land is sufficiently novel to warrant description.

By M. Edwards*

THE blacksmith in the country towns, or dorps, of South Africa, is the engineer for everything mechanical. When anything goes wrong with the great big ox-wagon, Oom (Uncle) Pete tells his native "boy"—of age between five and fifty—to trek to the nearest dorp and leave the wagon with Oom Jan for repairs.

And then the engineer and his "boy" hammer and bang that wagon into shape again with a sledge hammer, aided by that delicate instrument, the cold steel chisel.

Now the same blacksmith is the garageman for his "city," attending to cars of all makes that are quartered in his territory. And the worst of it is when automobiles first began to come into his shop for repairs, he considered the only change necessary to qualify to mend them was to add "and motor engineer" to the sign over his door reading "Blacksmith." He did not study anything pertaining to automobile science, other than the occasional makers' catalogues he managed to get hold of from car owners.

And then he got an agency for some particular make of car by simply writing to the manufacturers—his bank reference being good—together with his first order. Today most of these "motor engineers" still use the same old sledge hammer and cold steel chisel to operate on automobiles.

This has been the cause of many a good car getting a bad name in South Africa, and a resulting decrease in sales that will take years of good advertising, and education of local mechanics and engineers responsible for garaging, to pull up. As the automobile has advanced in complexity, so the "motor engineer" has sunk deeper in the sea of perplexity. Each year's model presents new pitfalls.

After all, most of the blame, if not all, rests with the manufacturer for giving the agency to anybody—provided the money side of the question is good—without first finding out something about the "village blacksmith," and whether he intends to continue in the use of his blacksmith tools and ideas. Instances have been known where sole agencies for South Africa, or a large slice of it, have been given to firms in towns with a population of much under 10,000. This is due to the want of knowledge of South Africa displayed by so many of the American firms who want to do oversea business.

They look at the map of Africa and see—down South—a large number of names with the usual dot or ring proving a town. Then they choose a name they fancy, perhaps Potgietersrust. Noticing many other names in the vicinity, and thinking they have found a good territory they write and give it out to the first man who proves his financial position satisfactory.

Whereas if these manufacturers knew that there were only two or three really decent sized cities in the whole of South Africa, it would make a difference. When the writer was in America, it was an ordinary thing to hear those two best known cities of South Africa, Cape Town and Johannesburg, mentioned in conjunction as if they were city and suburb, and on further pursuing the subject found they were often considered as such. This was an ordinary mistake among people who ought to know better.

There have been many efforts by really efficient and responsible agents for American cars in the larger towns of South Africa to bring about some sort of service system that would operate throughout the towns and "back veldt" districts equally well. And one of the first things realized by all attempting this was the need for eliminating many of the country-town agents—or at any rate educating them up to automobiles.

But one of the first real attempts on American business lines was made by the Hupp Garages, Ltd., which firm initiated South Africa into real service and distribution. Quite a lot of service is being talked by various firms handling the agencies for the better-known cars, but there is too often a lack of co-operation between their branches and sub-agencies in other parts of the country.

Hupp cars first came to South Africa in 1911, when the main agency was at Port Elizabeth, Cape Colony—a fair-sized city and a good business center. Then they spread all over the sub-continent, most of the other agents being dependent on Port Elizabeth agents for spares, etc., but not really a part of the same business.

The various branches and sub-agencies and direct agencies all over South Africa were finally consolidated in May, 1917. This consolidation was a pet scheme of Guy G. Catlin, Hupp factory representative, after he first landed in the country—new to all its ways, but sure that some sort of business system other than that in vogue was required if the automobile business was really to become a large one.

He went ahead at once, and after hard battling, taking over an agency here, forming branches there, and eliminating or buying small and practically useless country agencies, got things looking good and launched his Hupp service and consolidation schemes.

The head office of Hupp Garages, Ltd., is in Johannesburg, in the commercial center of South Africa. Branches are at Pretoria (where the company is registered, this city being the capital of South Africa), Cape Town, Durban,

*AUTOMOTIVE INDUSTRIES correspondent in South Africa.

Fig. 1—A business-like looking front. Fig. 2—Showroom for the proper kind of equipment. Fig. 3—The electrical laboratory equipment. Fig. 4—Interior of the Johannesburg garage

Port Elizabeth, East London and Maritzburg. There are sub-agencies in all the other important towns and a number of the small ones.

Sub-agents get their cars and spares from the nearest branch, business being done by them on policy defined by Hupp Garages, Ltd. In the past anyone could take up an agency; now it can only be done by a man or a company owning a garage or having knowledge of automobiles.

In cases where the garage is unable to finance the agency from Hupp Garages, Ltd., it is placed with a big merchant in town and worked on a 50-50 basis.

The company have card files showing stock on hand at each branch and sub-agency throughout the country. These are checked at the head office, and it is not necessary for branches and sub-agents to order, as the service department distributes each month. The prices of these spares—and new cars too—are strictly regulated by the head office according to the district. The factory, again, regulates the head office and reserves the right to place profit on cars. Otherwise Hupp Garages, Ltd., has no connection with the American factory. Of course the factory helps all it can in promoting business.

The following shows the number of people employed directly by Hupp Garages, Ltd., at the time this review was written. The numbers have since been increased:

	Whites	Blacks
Johannesburg	20	10
Pretoria	15	10
Cape Town	18	15
Durban	4	6
Port Elizabeth	7	6
	64	47
Grand Total	111	

Besides these there were ten demonstrators.

When it is taken into consideration that this company has only been in existence a little over two years, and that the table only gives direct employees at the head office and branches, it is certain that when the various troubles the automobile world here is passing through just now—petrol shortage, scarcity of shipping, and the resulting shortage of cars—are over, Hupp Garages, Ltd., will grow to be a huge concern. And it is now a huge automobile business for South Africa.

The departments of the head office are: Advertising and sales, retail sales, bookkeeping and accountancy, and order and service. Each department is controlled by a manager who uses his own individuality and is fully responsible for the working of his department. All the branches and sub-agencies are under direct head supervision. Advertising is done for the whole of South Africa from central.

The service adopted for owners is a controlled service, with garaging and overhauling, etc., on a coupon system. Old model Hupps are taken in part payment for new. Cars are sold on 50 per cent down and balance in twelve months.

The electric laboratory, started in Johannesburg at the instance of Mr. Catlin, is a revelation to South Africa. It is the only one in the sub-continent specially fitted up for automobiles, and a departure from the mere buying and selling of automobiles. Above all, a thoroughly qualified mechanic has been sent from the factory to teach mechanics all over South Africa what to do—and what not—to Hupp cars, and wean many from their beloved sledge-hammer and cold steel chisel.

It is estimated this year that 1200 cars are needed by the company to fill direct orders and sales based on cars sold in previous years. This is interesting in comparison with the first order for six cars in 1912, placed by Collins (then the South African agent, now managing director of the new company).

The Attitude of British Labor Toward Employers

The parliamentary leader of the conservative labor elements recently gave his views on "The Relation of Labor to Industry." His paper is of interest to American manufacturers who are attempting to get the point of view of the workman and to understand his fundamental reactions.

IT has frequently been pointed out in Mr. Tipper's articles that one of the primary moves in seeking a permanent adjustment of the industrial situation is for the employer to study and understand the point of view, ideals and aspirations of his workmen. A paper was presented recently before the convention of the Industrial League and Council in England which is of particular interest from this point of view. Although referring particularly to British workers, many of the ideas included are universal in application and well worth the attention of American manufacturers.

The paper was read by J. R. Clynes, a member of Parliament for the Labor Party. Mr. Clynes has been spoken of as the leader of those Laborites "who believe in constitutional methods." The Industrial Council and League is an association whose purpose is primarily to promote harmony between the employer and employed and to "foster harmonious relationships permitting a friendly discussion of industrial problems. Its functions are mainly educational." A portion of the paper, entitled "Labor in Its Relation to Industry," follows:

The relation of labor to industry is that there can be no industry without labor. But that is also the relation of capital to industry. With this difference—that labor is an aggregation of living human beings possessing as their only capital the power to keep industry alive by their service and exertions.

> **Capitalists in our present-day system have their place and many of them work hard and long. Their contribution in ability, brain, foresight, investigation and experiment is enormous. But the reward to some capitalists is out of proportion to the service they give when that reward is compared with the reward of the worker. This, I believe to be a disturbing factor to which many of our industrial troubles can be traced.**

We have all reached conclusions as to what a state of industrial and social life should be. But we are pulled back by the fact that we must deal with state and industrial life as it is. It is not a condition which grew out of theory, nor a condition which will be materially altered by merely applying theory to it. The condition which confronts us is a reality, and as the human element must enter more and more into all that we propose, the urgent human need is for something effective to be done now. It is not next year or during the next generation that we want to do something. That future period can be left for treatment to those who live in it. Our duty is not to hand over the job to our successors. It is to do now what is wanted now. The question, therefore, is, what can we do? It is not what can we preach about or hope for in the years ahead of us: it is, I repeat, a question of what can we undertake and accomplish now.

Beneath the disturbed surface of industrial trouble a great deal of substantial work is being done to make industrial troubles less likely in the future. Propaganda for the shaping of new principles of organization may never end so long as mankind considers that the ideal state has not been reached. Preparation for acceptable forms of organization within the existing social orders is now reaching a satisfactory level.

There is, however, no one remedy for industrial troubles. The causes are many and the cure will have to be attempted by several lines of effort. The better paid workmen were the men who, in the early parts of this year, showed signs of the greatest discontent and industrial stoppages were threatened by them. They had more than wage grievances.

> **Indeed, a great deal of the labor unrest springs from a natural and growing desire on the part of the wage-earner to find a more effective place than he has had before in our industrial system. Self-determination is a term which is now better understood.**

It is a term which might accurately be applied to the outlook of a large number of workers who are ambitious to settle for themselves the conditions of labor which surround them, or if not that, at least to secure some share in the authority which determines questions like hours of work, conditions of superintendence, control of overtime rates, and systems of piece-work, changes in machinery or methods of production, together with all the other workshop questions which lie outside the larger sphere of labor policy.

There is some evidence now to show that there is a spirit growing to enable workmen either collectively in the workshops or through their trade unions, to have opportunities to participate not only in the framing of schemes for control, but in the substantial benefits which these schemes can confer.

> **Making all allowance for other causes of industrial unrest, a quite common cause is due to the profits of industry being unfairly shared, and any expedient which will help to secure greater equality ought to receive the attention of workmen without the prejudice which previous methods inspired and without the deterrent of any official opinion recorded in former years either in the trade union club room or the workshop.**

There is a joint interest in industry which can be jointly shared only when the two main parties act upon lines which will give mutual advantages to both and enable both jointly to exact from our trades and businesses the utmost which effort can obtain for the common benefit.

The effect of the great world war upon the mind of labor has been, perhaps, greater than upon any other

class of the community. While all classes served on land and sea with self-sacrifice and valor, the working class have come back now that the war is over to the same social conditions, but with a mind determined not to endure them. This fact underlies many of the manifestations of discontent, which will grow in force until effective action is taken to meet a frame of mind which the war has produced.

The rule with employers of labor, and with many departments of State formerly was to vary wage rates only according to their standard of what it would cost working men to exist. They did not ask, "How much more could they give to working men?" They asked, "What was the lowest that working men could manage to live on?" Workmen would no longer submit to be governed by such a standard, and in asking for a higher and a better one, they were seeking opportunities for greater leisure and for more tolerable conditions of service. For centuries manual workers have been, politically and economically, in a state of serfdom, but now they have acquired very great power.

No doubt there were cases where workmen did not use their power wisely, but that had its counterpart in the history of our factory and workshop laws, which showed that in the past legislation was granted only after years of resistance to reasonable demands, and when employers of labor were compelled to yield.

The human factor in industry has been neglected to a degree which in these days was a fruitful cause of serious trouble, and we now have to do rapidly what it would have been well for the country had employers consented to do gradually in years gone by. Capitalists must no longer pursue their claims for private wealth without regard to the human needs of the masses of workers. If they continue to try, they will fail with disaster both to themselves and their country.

The sooner both employers and employed recognize that they should jointly exploit industry for the benefit not of one side, but of both sides, the better it will be for both. We cannot hope to keep our place in the markets of the world as a great manufacturing and exporting country by encouraging any system of under-production. Production may for the time being suffer some curtailment by reduced hours of labor, but output ought not to be lessened by any other means, and output can be greatly increased by improved systems of production, re-organization, the use of the best appliances, by good time-keeping, and by the removal of any old-time method which might have hindered production in the past.

Employers, however, must not make the mistake of thinking that workmen will agree to produce more unless they can enjoy a greater share of what they produce.

In other words, increased output must mean not only increased commercial prosperity or increased profits. It must mean an increased standard of social life for the worker with higher wages and, therefore, a greater purchasing power to buy and consume more of the goods resulting from labor.

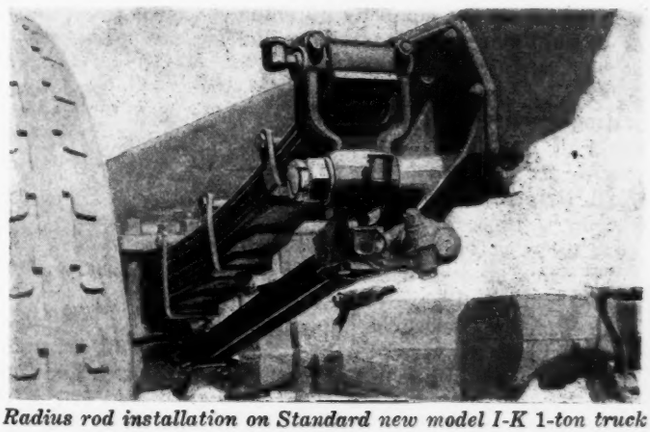
The workers can make no greater mistake than to encourage under-production. Scarcity of commodities is the opportunity of the profiteer. Scarcity may cause some little inconvenience to the rich, but it can cause real and continued privation to the masses of people whose purchasing power is limited. Some forms of profiteering can be punished by the law, but workmen who deliberately restrict output, or who fail to accept any form of industrial development which can make their labor more productive, are punishing themselves and their class without knowing it.

If profiteering is conscious pilfering, ca-canny is an ignorant act which deprives many people of their real needs. It inflicts no loss upon the favored class, which it may be designed to punish. It is a sentence passed upon the innocent by those who may not know they are guilty of a wrong to their own class.

When the workers were unorganized and could have little say in fixing labor conditions and pay, overproduction sometimes produced an artificial state of trade depression and unemployment. We have outlived that possibility, and we should outlive speedily the heresy which a few appear ready to foster, that lessened production means greater assurance of work for other people. On the contrary, it means the greater prospect of unemployment. It impedes our recovery from the industrial dislocation which the war inevitably caused. It keeps up prices, and lowers nothing but the workman's standard of existence. It is in the highest degree harmful to the general public interest, but in a special degree under-production is the enemy of the masses, whose pressing needs require a more abundant supply of all forms of materials for house-building, for food-production, the manufacture of every kind of house requisite, clothing and the common daily needs of existence. And to that I would add for especially increasing the volume of that export trade upon restoring which the commercial and trading life of this country depends.

Standard Truck Incorporates Radius Rod

A SLIGHT change has been made in the 1-ton model of the Standard Motor Truck Co., known as model I-K, which now incorporates a radius rod. Wear on the working parts of this radius rod can be compensated for by adjusting one bolt. The pins at the ends of the radius rod are lubricated by oilers. This model has the Continental N engine, Brown-Lipe clutch and three-speed gearset; Timken semi-floating rear axle; Spicer universal joints; Eisemann magneto; Stromberg carbureter; Ross steering gear and Long radiator.



Radius rod installation on Standard new model I-K 1-ton truck

THE world's largest dirigible, the R-38, which the British Air Ministry is building for the United States, will be ready for trial flight late in November. The ship is 694 ft. long and her six engines have 1950 hp.

The Long March of Industrial Relations

Three employees are to be elected to the directorship of Procter & Gamble. The event marks another step in the rapid development of industrial relations during the last decade. Mr. Tipper points out that we have progressed a long ways in development in a comparatively short time.

By Harry Tipper

"THE employees of Procter & Gamble next Friday will elect three of their number to the Board of Directors of the company. Five employees will be nominated in the primaries in each of the three plants of the concern, located at Ivorydale, Cincinnati, Kansas City and Port Ivory, Staten Island. From these fifteen the three to obtain the directorships will be selected. As far as is known Procter & Gamble is the first concern in this country to give its employees a place on the Board of Directors. Others have accorded the workers an increased share in the management of business, such as is called for in the industrial democracy plan, but the employee-directors of the soap company will share equal power with the representatives of the management and the stockholders in the conduct of its affairs.

"For thirty years Procter & Gamble have encouraged employees to become stockholders. A considerable number are now and have been for many years owners of the company's stock. The plan to give employees representation on the Board of Directors was first announced in March, 1911, by William Cooper Procter, President of the company.

Rules for the Elections

"The following rules will govern the nominations and elections:

1. Only those employees who have been in the service of the company six months or more on Sept. 10 and who are 21 years of age if male, 18 years of age if female, will be allowed to vote.

"2. Nominations will be made by the Employees' Conference Committee and shall consist of five names, not more than two of whom shall be members of the Conference Committee.

"3. Nominations shall be posted on all plant bulletin boards on Sept. 10.

4. In order to qualify for nomination for the position of director of the company an employee must be 30 years of age or more and must have had at least three years' service with the company.

"5. Elections will be by secret ballot. The local plant management will supply a ballot box for each department. Lists of qualified voters will be posted prior to election day.

"6. Printed ballots will be given out to all qualified voters, listing the five nominees in alphabetical order (one to be voted for).

"7. Usual election rules in regard to improperly marked ballot, etc., shall govern.

"8. Polls will close at 5 p. m. on Sept. 17. All ballot boxes will be delivered to the office of the Plant Superintendent, who will appoint three tellers and three auditors to make and certify to the count of the ballots.

"9. The employee of each of these plants who receives the highest number of votes shall be declared the choice of the factory force for election to the Board of Directors by the stockholders of the company at their annual meeting Oct. 13."

The quotation which is placed at the head of this article is sufficiently interesting to merit reading and some comment upon its significance. It is interesting because it indicates how far the methods of operations in individual establishments are departing from tradition. It indicates also what may be done by moving step by step toward a well defined ideal. It is perhaps most interesting because it represents the most radical step which has been taken by any concern in the direction of cooperative management in some years. The only organization which has anything approaching this degree of change is the organization of William Filene & Sons of Boston, and that organization being a department store presents an experiment which is hardly applicable to industrial necessity. On the other hand, this present experiment relates to a concern which employs several thousand people, has three different plants, widely scattered as to locality, and a character of work which does not lead to any unusual selection of employees.

It is interesting to note that the three directors who are to be chosen from the employees by election will have equal power with the other directors and their directorships will be in no way different from those appointed in the regular way. Furthermore, it is to be noted that these directorships are to be elected by the complete organization of employees, and not only by those employees who own stock in the concern.

As far as my investigations have carried me, this is the first time that employees have been given directorships or have any representatives sitting on the board of directors. In the organization of William Filene & Sons which was just mentioned, the employees' association has the power to take action over the veto of the board of directors by special majority, but this power is limited to matters which are concerned directly with the worker's requirements or conditions, and does not have anything to do with other matters of business which would come before a directorate. The employees in the case of Procter & Gamble therefore, are not only securing representation upon the board of directors so that their wishes may be known, but they are, through their representation on that board, securing a voice in and being consulted in reference to all other matters governing the conduct of the business.

Of course, the long development of co-operation between the management and the employees in the

Procter & Gamble concern has permitted a period of preparation for such a step which makes its final adoption neither particularly radical nor likely to lead to any important changes in the policy.

As the question indicates, the buying of stock by employees has extended over thirty years, the development of conference committees has been going on for a number of years and the other mutual activities of management and employees in connection with the business have been developed with similar care for considerable periods of time.

This means that there has been a long period of education of both parties in connection with their common interests and necessities. One activity has led to another, and one measure of understanding has led to a greater possibility of understanding. It is not at all probable that such a step could be taken in an organization where the industrial relations was a matter of new study without vitally affecting the stability of the organization and leading to some turmoil or confusion.

When all these facts have been accepted, however, this development gives us a landmark by which we can measure the amazing revolution which has taken place in the relations of employer and employee in the last ten years, and this revolution is indicated not so much by the action of Procter & Gamble, but by the absence of violent comment in respect of it, and the way in which it is quietly accepted or rejected without any surprise or any fierce denunciation.

It takes quite an effort of the imagination to see what a stir such a thing would have made if it had been announced in 1910. Now it passes over the plate and is noticed by short articles in a few newspapers and other publications. It will be the subject of discussion in some of the magazines, but will be accepted as though it were quite an ordinary matter, because we have traveled such an amazing distance in our consideration of our employee and employer relations and our acceptances of the necessity of organization changes.

If the interested reader and the student of industrial relation matters will consider this experiment, the development of the profit-sharing, the success which has attended the work of John Leitch, Robert E. Wolf and others, the long lists of concerns who have established conference systems, works committees, and so forth, the attention which is being paid by the political parties to economic development and the absorption of the people of European countries in industrial reorganization, he will get a picture of an immense change accomplished so far with very little disorder, with no great difficulty and in only one country with any considerable amount of death or destruction.

As I wrote this, I had a fleeting glimpse of the president of the large business corporation I worked for fifteen years ago and could, in my imagination, see his reaction to such changes as I have indicated in this article. We have gone far, and up to the present have gone the distance with comparatively little trouble. This Procter & Gamble matter enables us to measure the distance a little more correctly and see the length of journey we have made in the short time indicated.

The Problem of Automotive Traffic in the Cities

(*Continued from page* 727)

building corners and providing setbacks of the building line for a considerable distance on each side of each corner in order to provide reservoir standing space for street traffic.

(9) These setbacks and cut-offs should be accompanied by setbacks of the curb and a considerable enlargement of the curb radium at the corners.

(10) Where considerable enlargements are deemed necessary, consideration should be given to the possibility of introducing features at the centers of intersections around which traffic should be carried by the rotary principle.

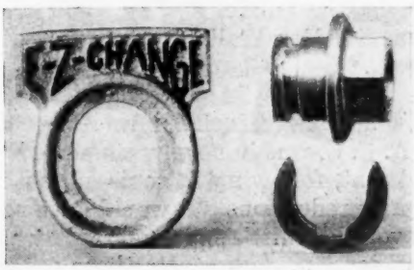
(11) In cases of extremely heavy traffic, consideration should be given to the introduction of pairs of one-way streets in lieu of extra wide thoroughfares, space between the pairs being devoted to the usual real estate use.

(12) The scheme of designing streets in three should always be considered for those destined to carry heavy traffic, so that surface street railroads, commercial vehicles and other traffic may be cared for respectively.

(13) In general, parking space should not be provided to any great extent in city plans, such parking space in connection with railroad stations (both freight and passenger), theaters, hotels and even department stores and large commercial buildings should be arranged on private property.

Rim Lugs Readily Changed

A RIM lug has been introduced, the prominent feature of which is that the nut may be readily removed and replaced with another when excessive wear occurs. This lug, known as the E-Z Change, is made by the Auto-Products Co., and is shown in the accompanying illustration. There are three parts, the lug proper, a nut, and a lock for the latter. This lock slips into a groove in the nut, whereupon a screwdriver can be inserted in the slot shown and the parts readily tightened. The use of this lug does away with the nuisance of worn lugs, and the device should appeal to automobile drivers. The illustration herewith shows the three parts which go together and the operation can be understood from it.



Rim lug with nut and lock

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The AUTOMOBILE

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Automotive Industries—The Automobile is a consolidation of The Automobile (monthly) and the Motor Review (weekly), May, 1902, Dealer and Repairman (monthly), October, 1903, and the Automobile Magazine (monthly), July, 1907, and The Horseless Age (semi-monthly) May, 1918.

An Unfortunate Incident

THERE was one extremely unfortunate incident connected with the situation attending the adjustment of prices of automobiles last week. That was when the Wall Street ticker services were first to announce that the manufacturers of passenger cars had met in Detroit to discuss the problem dumped upon them by Henry Ford. Manufacturers' meetings when prices are being discussed are not entirely approved of by the public, nor by some agencies of the government. For Wall Street to know of these meetings first, adds fuel to the flames of curiosity. When those present decline to discuss what is said, there may be still more fuel. It was very fortunate that the N. A. C. C. was in no way connected with this meeting and that, following it, some of those present announced price reductions. It would have been much better to have told a little more of what was said in the executive session. The fact: those present were entirely uncommunicative.

Front Drive of Fore-Carriage Construction

IN the past the motor fore-carriage or front drive unit has been developed mainly with a view to converting existing vehicular equipment to motor propulsion. This proposition looked especially attractive in the fire department equipment field where the advantages of motor drive were well recognized, but the adoption of motor apparatus was retarded by the heavy investments tied up in horse-drawn equipment. The conversion plan seems to work out all right and considerable apparatus thus converted is now in use by fire departments all over the country.

A new opportunity for the front drive or fore-carriage is now looming up in passenger transportation. In order to make motor buses commercially successful, where there is heavy traffic and competition from other services, they must be capable of carrying a large number of passengers, and must, therefore, be built on the double deck plan. A double deck omnibus, however, is likely to be exceedingly top heavy under certain conditions, and therefore dangerous, unless the frame is kept very low. For instance, in pleasant weather it will happen that all passengers crowd to the upper deck, and if there are none on the inside the whole passenger load is on a high level, which is apt to render the bus quite unstable.

With the ordinary forms of rear drive the floor boards of the lower deck cannot be much less than 32 in. above the road surface, whereas in a front-drive bus, with the whole of the propelling mechanism located ahead of the passenger body, this height might well be reduced to 15 or 16 in., and even more if the surface to be traveled over is exceptionally even. The increase in stability resulting from a lowering of the whole passenger load by nearly a foot and a half need hardly be emphasized. Nor is this the only advantage gained by the lowering of the body, for the easier ingress and egress will certainly be appreciated by the passengers.

A number of front drive systems have been exploited during the past several years, chiefly with a view to their application to private passenger cars. While driving through the front wheels has a slight advantage in reducing the traction resistance on heavy roads, it is doubtful whether this compensates for the various disadvantages, chiefly the complication of driving through the steering wheels. Moreover, the rear drive is so firmly intrenched in automobile practice that an enormous inertia of public opinion would have to be overcome to dislodge it. But in special fields like the one above described the front drive has its legitimate place.

Bathing in a Company Tub

THERE is a manufacturer in Cincinnati who has been remarkably successful in getting the cooperation of his workers through a practical application of the golden rule. How he has done this and the results that he has achieved are another story. The pertinent fact here is that he is ready and willing

to do for his employees anything they may desire that is fair and square.

When this manufacturer moved his shop into a larger building he had for the first time some extra floor space. He called together his employees and offered to equip one floor of the new building with rest rooms, shower baths, or whatever they should suggest along that line. One girl arose in the meeting and said, "I think I speak for all of us when I say that we would rather have you give us that money in our pay envelope so that we can get the things for ourselves. Personally, I like to take my bath at home." And the other employees voted unanimously in favor of this sentiment.

Given first class working conditions, as regards light, heat, ventilation, hours, wages, etc., the manufacturer is likely to find it well to consult with his employees before installing an extensive "welfare" plan. Such work cannot accomplish its purpose unless it meets with the approval of the employees, and consequently should be established or built up in line with what a majority of them desire. If there is a popular demand for a base ball team, such an organization will work out to the benefit of both employer and employee, but if there is not a popular demand it will work to the benefit of no one.

Such activities should be installed in answer to an expressed need or desire among the employees; they should not be installed as a means of keeping men contented, even though some other justice is being withheld, nor as an antidote to unionism. When the manufacturer helps his employees to start and carry on some activity for which there is a spontaneous desire, he is operating his "welfare" work in the right way and he will gain in production and decreased turnover.

It must be recognized that there is a definite prejudice among workmen against tying themselves up too closely, body and soul, with the company for which they work. Arthur Nash, president of the A. Nash Company, said the other day at the Babson Labor Conference. "No self-respecting man wants to work for a company and then live in a company house, buy his food and clothes at a company store, his light and heat from a company power house, send his children to a company school, attend a company church and bathe in a company tub." And the manufacturer will do well to consider this point of view when analyzing the achievement and possibilities of the "welfare" work in his own factory.

Unsatisfactory Grand Prix Rules

IN the history of automobile contests it has been necessary to change regulations frequently; in endurance contests because automobiles are now made so durable that any contest of ordinary severity will not evolve a single winner, and in races because with engines and cars unlimited in dimensions such tremendous speeds are now obtainable that the drivers can no longer handle the cars with safety.

It was the latter consideration which last year led to the reduction in the piston displacement limit for the Indianapolis race to 183 cu. in. At the same time, in order to reduce the total number of starters and thus minimize the hazards of the track, while still keeping all the most formidable competitors in the race and thus add to the public interest, preliminary or elimination trials are held in which each competitor must develop a certain minimum speed to be admitted to the race proper.

In the French Grand Prix race for 1921 a new plan has been conceived and an engine bench test is substituted for the preliminary races. In these bench tests the 183 cu. in. engines must develop 30 hp. or more at 1000 r.p.m. and 90 hp. or more at 3000 r.p.m. to be admitted to the race. This calls for a brake mean effective pressure of 130 lb. p. sq. in., and many designers seem to be of the opinion that this is impossible of attainment at the present time at such high engine speeds as 3000 r.p.m. At any rate, a great deal of opposition is being developed to the rule, especially in England, and at the present time it looks rather doubtful whether the race can be held unless the brake test is eliminated or at least changed so as to be less rigorous. One British leading firm which controls three makes of cars which in the past have figured prominently in racing announces that if the rules are changed so as to correspond to the 1920 Indianapolis rules it will enter three teams of three cars each, but that it does not approve of the preliminary bench test. There seems to be a feeling that the bench test was designed to meet the wishes of some particular manufacturer who feels sure of his engine but is less certain of his chassis. There is certainly not much logic in combining a scientific bench test of one part of the car with a rough road test of the whole. The road trial, of course, involves many elements of chance which are absent in the bench test. It is argued by those who object to the bench test—and obviously with good reason—that success in the race is what each competitor is after, and that the matter of engine performance required for success may be left to the competitors themselves.

Owing to the general dissatisfaction with the regulations the outlook for the 1920 Grand Prix is anything but bright. There is very little chance for a team from this country competing, because none of our large manufacturers participates even in our own big classic, and to most of those who have been building racing cars in America during the past several years the expense of a Grand Prix venture would undoubtedly be prohibitive.

AN effort is being made to have the Fourth International Road Congress held in this country during 1922. The Congress has been invited to meet in Italy and unless an invitation is received from the United States by Jan. 1, 1921, the Italian invitation will be accepted. To have this invitation in its proper form, it will be necessary for the U. S. Congress to vote funds to make this country a member of the road Congress. This action must be taken before Jan. 1 next. Undoubtedly the Congress would mean much to this country and the automotive industry should be able to help spur our Congress to action. It looks like an impossible job, but that should act as a spur to men who have accomplished what automotive men have in industry.

Rush Toward Lower Prices Slows

Industry Adjusts Self to New Basis

First Rush to Meet Reductions Slackening—Business Stimulated in Many Centers

NEW YORK, Oct. 6—Developments of the past few days in the automotive industry have shown a stiffening tendency in the market. There still are manufacturers who are lowering prices, but this movement now has become scattering compared to the first rush which followed the reductions announced by Ford and Franklin.

An analysis of the situation shows a larger percentage of manufacturers who have expressed themselves as opposed to price-cuts at this time, though all seem agreed that reductions are certain in the spring or early summer. This is evidenced in the price guarantees given.

That business has been stimulated is manifested in reports reaching AUTOMOTIVE INDUSTRIES from correspondents in leading trade centers. This sales movement has reached its fullest development among those makes whose prices dropped, though there has been some slight stimulation in all lines. The effect on the public apparently has been rather a desire not to get caught on a falling market than to save the difference in the car price.

Ford and Franklin dealers particularly report a rising tide of sales. In a statement from the factory Franklin placed this increase at 333 per cent, and declared it was preparing to resume operations on a full production basis. Ford has made no announcement from the factory, but dealers declare the increase in sales to be very large.

Line Up for Guarantees

Leaders among the manufacturers who have declared themselves against reductions at this time are the General Motors group, Packard, Peerless, Hupp, Dort, Haynes, Nash, and Dodge. Manufacturers of new cars just entering production have made no formal statement as regards price, except for Rolls-Royce, which says there will be no change in contemplated prices.

Hare's Motors has taken a stand at variance with most manufacturers of higher price cars in that they have lowered prices on all standard models of Locomobile $1,350 and on all Mercer models, $1,000. Other makers who come into the lower price ranks since last week are King, Jordan, Gardner, Westcott, Maibohm, Velie. King will protect dealers and distributers on all unsold cars shipped from the factory after July 1.

Comparison of Touring Car Prices

Car	Price Oct. 1, 1916	Price Sept. 1, 1920	Price Oct. 1, 1920	Increase Oct. 1, 1916 to Oct. 1, 1920
Anderson—				
5-passenger	$1250	$2145	$2245	$995
7-passenger	1295	2195	2295	1000
Bell, 5-passenger.....	875	1595	1495	620
Bour-Davis—				
5-passenger	1250	2825	2535	1285
7-passenger	....	2875	2585	....
Chalmers, 5-passenger..	1090	1945	1795	705
Chandler, 7-passenger..	1295	1995	1895	600
Cleveland, 5-passenger..	....	1485	1435	....
Crow-Elkhart—				
5-passenger L.....	795	1395	1195	400
5-passenger S.....	....	1645	1445	....
Essex, 5-passenger.....	....	1795	1595	....
Ford, 5-passenger.....	360	575	440	80
Franklin, 5-passenger...	1850	3100	2600	750
Gardner, 5-passenger...	....	1285	1195	....
Hudson, 7-passenger....	1475	2600	2400	925
Jordan, 7-passenger.....	1650	3075	2875	1225
King, 7-passenger.....	1400	2835	2725	1325
Lexington, 5-passenger..	1185	2185	2285	1100
Locomobile, 7-pass.....	5400	8900	7550	3250
Maibohm	....	1595	1475	....
Maxwell, 5-passenger...	595	1155	995	400
Mercer, 6-passenger....	3000	4950	3950	1950
Moon—				
5-passenger, 6-48	1295	2385	1985	690
7-passenger, 6-68.....	....	2950	2485	....
5-passenger, 6-42.....	....	2185	1885	....
Overland Four.....	....	1035	895	....
Paige—				
5-passenger	1090	1925	1770	880
7-passenger	1375	2995	2795	1420
Pierce-Arrow—				
5-passenger, 38.....	4300	7250	7500	3200
7-passenger, 48.....	5000	7750	8000	3000
Roamer, 7-passenger....	....	3350	3450	....
Studebaker—				
5-passenger, 40.....	....	1485	1485	....
5-passenger, 50.....	....	1875	1750	....
7-passenger, 60.....	1085	2350	2150	1065
Velie—				
5-passenger, 48.....	1085	1985	1885	800
5-passenger, 34.....	....	1585	1385	....
Westcott—				
7-passenger, C-48	1690	3190	2290	1330
7-passenger, C-38	....	2690	2290	....
Willys-Knight	1285	2300	2195	910

Reductions in the ranks of trucks now include Day-Elder, Patriot, Indiana, Federal and Diamond T.

Say Reductions Not Justified

Most of the manufacturers cutting prices assert that the reductions are not justified, but that they are made to comply with the spirit of the times and increase the purchasing power of the dollar. This is the contention, for example, of Emlen Hare of Hare's Motors, and Russell E. Gardner of the Gardner Motor Co. On the other hand, C. W. Nash, president of Nash Motors, contends that the price of that car has advanced only 24 per cent and that since the cost of production has increased infinitely more than that no reduction is possible if the company is to operate on a reasonable margin of profit. A similar position is taken by Webster Colburn, vice-president of the Dorris Motor Car Co., who says the price of that car will not be reduced during the six months beginning Oct. 1. This company was considering an increase.

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Parts Makers Study Price Changes

Comparison of Truck Prices

Make	Price Oct. 1, 1916	Price Sept. 1, 1920	Price Oct. 1, 1920	Increase Oct. 1, 1916 to Oct. 1, 1920
Autocar	$1650	$2300*	$2300*	$650
Day-Elder—				
1-ton	....	2100	2100	....
1½-ton	....	2450	2300	....
2-ton	....	2950	2750	....
2½-ton	....	3150	2950	....
3½-ton	....	3950	3700	....
5-ton	....	4950	4600	....
Ford	....	600	545	....
Indiana—				
1¼-ton	....	2425	2290	....
2-ton	....	3140	2950	....
2½-ton	....	3350	3150	....
3½-ton	....	5075	4775	....
5-ton	....	5075	4775	....
Federal—				
1-ton	....	2600	2500	....
1½-ton	....	2825	2725	....
2-ton	....	3150	3025	....
3½-ton	2800	4100	3950	1150
5-ton	....	4750	4600	....
L. M. C.	....	2950	2540	....
Detroit—				
1-ton	....	1890	1690	....
2-ton	....	2650	2450	....
3-ton	....	3650	3450	....
Stewart—				
¾-ton	1290	1450	1295	5
1-ton	....	1850	1650	....
1½-ton	....	2450	1995	....
2-ton	....	3075	2495	....
2½-ton	1390	3200	2595	1205
3½-ton	....	4100	3395	....
Diamond T—				
1½-ton	....	2950	2600	....
2-ton	....	3645	2995	....
3½-ton	....	5015	4115	....
4-ton	....	5885	4825	....
5-ton	....	6110	5010	....
†1½-ton	....	3250	2875	....
Patriot—				
1-ton	....	1990	1785	....
2-ton	....	2785	2450	....
3-ton	....	3845	3450	....
TRACTORS				
Federal—				
Light tractor	....	3325	3200	....
Heavy tractor	....	4300	4150	....
Fordson	....	850	790	....

*The war tax was formerly absorbed by the Autocar. The present price is net and does not include this item.

†With combination body.

ROLLS-ROYCE FIXES PRICES

SPRINGFIELD, MASS., Oct. 4—Rolls-Royce of America, Inc., expects to be turning out completed chassis in November. The price has been fixed at $11,750 and with the body the car will cost from $15,000 to $17,000, according to type. It is understood that price reductions by American manufacturers will have no effect upon the Rolls-Royce company. Plans for the first year call for the production of about one car a day with importation from England of probably 100 more.

Many Contend They Can't Cut and Live

Declare They Are Loaded Up with High Priced Materials —Two Make Reductions

DETROIT, Oct. 5—While a defiant attitude is assumed by the majority of the parts makers in the Detroit territory there are unmistakable indications of a downward trend in prices. Announcement of a 7 per cent reduction has been made by the Timken-Detroit Axle Co. and of a 5 per cent cut by the Continental Motors Corp. Some of the parts manufacturers do not hesitate to express bitterness towards the automobile manufacturers who have lowered their prices on the theory that a considerable share of the reduction will be absorbed by the men who provide the materials going into the construction of completed cars.

J. H. Main, purchasing agent of the Cadillac Motor Car Co., expressed to-day the views of the car manufacturers on parts prices.

"They are bound to tumble," he said. "Of course, there will be no break until the manufacturers get hungry, but when that time arrives they will come to us with appeals to take their product at a reasonable price. It will not be immediately, but in my opinion it will take only from 30 to 60 days for the parts men to reach a decision to get down to a reasonable basis. I look for it about Dec. 1. A downward movement is inevitable."

On the other hand, the assertion that there is not the slightest chance of a decrease was made by V. I. Shobe, assistant general manager in charge of sales for the Zenith Carburetor Co.

"Labor and material prices are the same," he said, "and in fact we are looking for increased prices in the material market. The parts manufacturers have been making the smallest profit of any of the industries allied with the automobile and they cannot cut prices and exist."

At the office of the Detroit Gear & Machine Co. it was declared the situation simply was one wherein the automobile manufacturers wanted the parts makers to carry the load.

"They placed their orders months ago at high prices and when the depression came they cut schedules and specifications and simply announced they could not take care of contract deliveries," declares President A. T. Copeland. "The parts makers with heavy inventories bought at high prices to take care of the car makers' specifications are overloaded

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Lower Prices Renew Sales Interest

Cleveland Reports General Trade Help

Dealers Find Business on All Cars Stimulated — Banks Maintain Policies

CLEVELAND, Oct. 4—A canvass of representative automobile dealers here since prices of several cars were reduced brought forth the composite view that business had been stimulated generally by the cuts.

Every dealer took an optimistic view of the outlook.

Dealers carrying lines that have been reduced without doubt have a temporary advantage over others whose cars have not been reduced, but the latter are arguing to overcome that with the assertion that their prices were not boosted as were some during the war, and that the others have now come back to an equal basis with the lines not reduced. The dealers selling cars at prices that have prevailed for some time apparently have not been hard hit by the reductions and they assert that in the general quickening of business that followed reductions they have shared to an extent.

Used car dealers are more upset about market conditions than are those who carry new cars.

Dealers who handle new and used cars seem to be in a greater quandary than those who make it a business of handling used cars only. The latter have not made so great allowances in many instances as have dealers who take second hand cars in trade. The Ford price reductions caught some dealers hard. Several used car dealers are not making any more purchases. The prices paid for used cars have slumped considerably, reductions ranging all the way from $100 to $400 a car.

No Alarm Felt by Banks

Bankers interviewed seemed not to be alarmed at the situation. At the Federal Reserve Bank the credit manager asserted that price reductions would not affect the general policy.

At the First National Bank, A. W. Marshall, vice-president, asserted that there is nothing in the situation that should cause dealer or manufacturer any alarm. The price reductions are on cars, he said, and his bank did not loan on cars, but on financial statements of customers. He also expressed his conviction that the price reductions were a help to the industry, and that they would stimulate it, although he was frank to admit that certain manufacturers were so situated that it was not good policy for them to reduce until there is a drop in cost of production.

WELL! WHO PAYS?

A MAN who claims to know, regarding a certain car, says its price could be reduced $200 or so without causing any particular loss except to the tax collector. Here are his figures—illustrative rather than accurate:

Materials cost	$300
Labor cost	300
Factory overhead	300
Executive overhead and sales cost	100
Excess profits tax	200
Factory cost	$1,200
List price	$1,800
25% maximum dealer discount	450
Price factory gets	$1,350
Factory cost	1,200
Factory profit	$150

The present book profit on the car is $350. Of this the excess profits tax collector takes $200. If the price were cut $200 the profit would come below the excess figure and would give the factory approximately the same profit it makes now on a selling price $200 lower.

Kansas City Business Helped by Reductions

KANSAS CITY, Oct. 4—Motor car distributers, both of lines cutting prices and lines holding steady, are optimistic, reporting increased business since reductions were announced. Dealers in cars now priced lower have made sales to waiting patrons who have delayed for hoped-for cuts in car prices. Dealers in cars not reduced continue to point out to prospects that their cars have never been over-priced, and are on stable price levels. The increased activity in sales and the overcoming of sales resistance by means of lower prices are stimulating the buying of cars generally, dealers say.

The position of dealers whose cars are not lower priced is strengthened by their ability to demonstrate the continuing high prices of raw materials and labor. Their position is also strengthened by the public discovery that retail prices are not dropping generally or radically even on the lines of merchandise concerning which there has been wide publicity over the reductions made by mail order houses and by speculators. Some dealers deprecate the guarantee of prices for any period, because such guarantee causes slump in sales toward close of the period.

Kansas City dealers are perhaps in a favored situation, because of prosperity of the territory springing from unusually large agricultural production.

Slight Effect Seen in Milwaukee Trade

Dealers Find Time Necessary for Favorable Reaction from Price Reductions

MILWAUKEE, Oct. 4—Beyond enabling dealers to close a percentage of live prospects who had been holding off because a belief that lower prices would come by the time of the beginning of the touring season in 1921, the reductions announced by a number of passenger car factories have had no appreciable effect upon retail business thus far, according to the general tenor of reports gathered from dealers. It was not expected that the announcements of reduced lists would precipitate a rush for cars, consequently local dealers are satisfied that at least some new business has been created.

In the opinion of leading dealers, it will require some time for the public to act upon the suggestion of reduced prices. Although such a development had long been looked for and talked about, its actuality came with a suddenness that was bewildering if not stunning. Generally speaking, the situation is one of conversation rather than buying. The conflict of early expressions of some makers following the Ford announcement with the actual reductions these makers have now made public has left the public rather perplexed.

Bankers in Milwaukee say the developments respecting selling prices will not affect their treatment of commercial demands from manufacturers, distributers or dealers. They insist that while it was deemed necessary to cut loans about in half several months ago, an easier feeling has developed since that time which they believe will continue along that line.

CINCINNATI BUYERS WAIT

CINCINNATI, Oct. 4—Except for cars whose prices already have been cut, there is little activity in automobile sales here. The lower prices are bringing in some buyers for cars with the new prices, but in general prospects seem to be waiting until the price situation becomes stabilized before committing themselves to purchases. Several sales were made early in the week, due largely to negotiations opened during the automobile show last week. These had a tendency to boost business but not enough to offset losses due to uncertain conditions. The sudden flurry which followed Ford's announcement has subsided somewhat since later reductions were announced.

Dealers Look for Trade Resumption

Baltimore District Upset by Changes

Dealers Keep in Touch With Factories on Situation—Banks Watch Prices

BALTIMORE, Oct. 4—Henry Ford's price cut, which has led the way for a general reduction of prices on motor cars and other commodities, is having a varied effect in the automotive field in this city. Dealers whose cars have been cut in some instances—the cheaper cars—are optimistic and are already doing good business. Again some dealers, whose cars have been cut—the better grade—do not look for much stimulus.

On the other hand the dealers, who are handling lines that have not been cut appear to be more or less at sea as to what to do and are waiting for a settling of the situation before venturing any opinion on the future business. Some of the latter dealers expect to visit the headquarters of their factories immediately to get a first hand line on the situation.

E. R. Myers, president of the Baltimore Automobile Dealers' Association, Inc., and head of the Motor Car Co., state distributers for the Overland and Willys-Knight lines, said: "The cut which has affected our line as well as other lines has been a real stimulant. There are plenty of buyers with lots of money and these people have been waiting for the market to break for a long time. They have been arguing that sooner or later it would come, for they have held that the manufacturer must do something to bring business and to give, as they believed, better prices."

New Business Not Wanted

Waldo Newcomer, president of the National Exchange Bank and president of the Baltimore Clearing House Association, stated: "All is caution in our dealing with passenger car buyers, for we are playing very safe. We are not out after any new business in this direction, and we are watching this price changing condition very carefully."

Arthur Stanley Zell, president of the Zell Motor Car Co., distributer of the Peerless and Liberty, said: "Our lines have not cut. We have assurance from the Peerless people that we will stand as we are. The Liberty folks will hold a meeting next week, at which I am going to attend. I don't know what will be the outcome in that direction. We have not heard of any big rushes of business with any of the firms that have had their lines cut. Our own policy at this time is not to worry. Our business has been good all the year, and I am sure we will be doing business right along.

H. S. Block, distributer for the Chandler and also head of the Block-Cleveland Co., both businesses being conducted separately, said: "It's too early to tell just what the cuts will do. The Chandler buyer, like the Hudson buyer and others of the class, will not be hurried in buying their cars because of $100 or $200 saving. I don't think those cuts make any difference to them. Perhaps it may act as a stimulant, but October, November and December buyers never flood the market for motor cars."

Sales Outlook Better in Southern District

ATLANTA, Oct. 4—Dealers and distributers in the Atlanta territory, handling moderately priced automobiles on which price reductions have been made, report sales, both wholesale and retail, have developed an immediate and highly satisfactory increase as a result, and that the outlook for the coming winter is excellent.

Dealers and distributers of higher priced automobiles on which reductions have been made report increased sales, but not to as great an extent as dealers handling lesser priced cars.

Dealers and distributers handling automobiles on which no price reductions have been made are preparing to greatly intensify their selling and merchandising campaigns to offset the tendency on the part of the public not to buy. This tendency is caused by the fact that most people believe virtually all manufacturers will reduce their prices, and they are holding off buying for that reason.

With one exception, Atlanta bankers interviewed as regards their credit policy state they believe price reductions in various makes of automobiles will have the effect of loosening up credit. This, they say, is because sales will greatly increase and, therefore, the banks can more readily handle automobile paper.

WILMINGTON LITTLE AFFECTED

WILMINGTON, DEL., Oct. 4—While there has been a falling off in the demand here for motor cars it does not appear to be heavier than is usually experienced at this time of the year, according to local dealers. Even now some of the dealers are unable to obtain enough cars to supply the demand, while in some cases there is a stagnation, with cars on hand.

The trade is going right after business along the same lines as in the past. Price reductions do not appear to have had much local effect, except to stimulate the demand for certain lines of cars that have come down. Dealers in other lines do not seem to feel alarmed.

South Sees Revival As Result of Cuts

Bankers Share Optimism of Dealers in Lower Prices—Easier Credits Expected

NEW ORLEANS, Oct. 4.—New Orleans dealers and bankers look forward to better business and expect marked relief in the strain on credit as results of reductions. Dealers whose cars have been reduced in price are preparing to put on larger forces of salesmen.

An average of their expectations puts the increase in sales forecast by these dealers at approximately 35 per cent, with all declaring that the increase would be 70 per cent were it not for the difficulty obtained in handling automobile paper through the member banks of the Federal Reserve system.

Dealers note a waiting attitude on the part of prospective buyers, some distributers going so far as to say that they have been unable to close men who were on the point of signing when the price-cuts came but who now seem to be waiting in the belief that eventually "they will get a Packard for the former price of a Ford." All the dealers, however, are united in the belief that these price reductions mean better business in passenger cars throughout the South, and that they will do more to counteract the tightening up of the banks than anything else which could have been done.

Feel Reductions Must Come

Distributers of cars which have not been reduced in price are "going fishing" or doing other pleasant things to kill time. They are waiting to see what will happen, and, according to a survey of some dozen of these dealers, they expect one or two things to happen: either their factories will voluntarily reduce prices, which the bankers say they will have to do; or the people, by buying cheaper cars, and waiting, also, for price cuts on the better makes, will, in the end, compel the manufacturers to reduce prices. The dealers lean to the latter belief, while the bankers hold that the automobile factories, in order to continue sufficient volume of sales to make their investment profitable, will have to reduce prices even on the most expensive cars.

The bankers of New Orleans, who speak by virtue of their close connection with all the branch banks in this, the Atlanta Federal Reserve District, with authority for the bankers of virtually all of Louisiana and Mississippi, are as delighted with the price reductions and the consequent prospects of greatly increased business as are the dealers and look for enlarged business.

Coast Buyers Favor Cars That Reduced

Guarantees of Little Value in Promotion of Sales—Ford Sales Heavy

PORTLAND, ORE., Oct. 4—Price reductions on motor cars have unquestionably stimulated demand for them in this territory, though slump that followed original Ford announcement has not been entirely overcome. Ford sales are very heavy. The best criterion of generally increased interest by buyers has been the many sales at the automobile show this week at Salem, in conjunction with the Oregon State Fair. Not only have many sales been closed there, but exhibitors report a live prospect list and attribute this to reductions.

On the other hand, many lines not reducing have hard sledding, due to the widespread belief that decrease will soon come. Guarantees against reductions have helped with cars like the Cadillac, Dodge and Oldsmobile, but nevertheless, buying trend is unquestionably toward those cars that have reduced.

Denver Anticipates Further Reductions

DENVER, Oct. 4—Sales are practically at a standstill since the first cut was announced, but dealers report slight improvement over first few days and predict early stabilizing. The public is still hesitant because expecting other makes to drop and even further drops in those already reduced, but cut cars are being advertised as now settled on bedrock, and some lines are guaranteeing against reduction. Dealers handling non-reduced cars claim that unnecessarily big price advances in the last two years naturally caused some cutting, but argue that high material and labor costs are against general reduction beyond that forced by price inflation or overproduction.

One distributer of cars and trucks says that upset condition is a mere flurry and declares that the worst trade obstacle is the inability of farmers to get crops shipped or to borrow money for needed cars or trucks until they realize cash on crops already harvested.

All Prices Advanced—All Should Come Down

LOS ANGELES, Oct. 4—Business on passenger car lines that have not reduced prices is stagnant. In nearly every instance these dealers are heavily stocked and they feel demoralizing conditions will mean big losses of business to competitors. At this time none was prepared to offer suggestions as to how they will overcome the situation. All are resorting to heavy advertising in an effort to assure recent buyers and prospective purchasers that their investment is protected, but the public will not accept explanations, on the basis that all prices went up and if some can be reduced all should be. The situation has stunned sales activities. Dealers with cars on which prices are reduced are not enjoying stimulation of the effect as public feels first reductions are merely forerunners and others will follow.

The loss on used cars representing lines that have reduced new car prices will approximate half million dollars, as small dealers were well stocked.

Business at Standstill in San Francisco Row

SAN FRANCISCO, Oct. 4—There has been less business done on Motor Row this week than at any time during the former period of depression. Automobile salesrooms look like a deserted village. Buying has practically stopped and the public apparently is waiting to see what other prices will drop before investing in a car. Distributers think, however, that this condition is only temporary, and the belief here is that market conditions will be stabilized with consequent renewed buying within a week or ten days.

PRICES UNSETTLE CONDITIONS

INDIANAPOLIS, Oct. 4—Trade conditions unsettled as a whole, although some individual dealers are not feeling price cut of other lines as heavily as others. For example, King agency sold four cars last week, an unusually large number even in normal times. However, as a general rule, lines not reduced have suffered serious setback, and Cole agents frankly admit they are marking time pending readjustment of prices. It is generally believed that cars attempting to hold to old price schedules will lose bulk of trade. Ford agents in Indianapolis territory sold fifty cars the first day new prices were in effect.

NORTHWEST BUSINESS DULL

MINNEAPOLIS, Oct. 4—In Northwestern wholesale territory announcement of price cuts or guarantees against declines have not spurted business appreciably. Retailers seem to be marking time, waiting to see whether their makes will drop or because of stringent credit conditions. In fact, while there is improved business in some distributing houses from cut in prices, the aggregate is not large.

Although credits are still tight there is some inquiry at the two enclosed car shows in the Twin Cities.

Summary of the situation is that car sales are slow due to inability of purchasers to get money to buy.

TO BUILD NEW SCRIPPS PLANT

DETROIT, Oct. 4—Plans for an assembling plant to cost a million dollars have been drawn by architects for the Scripps-Booth Corp. in Oakland, Cal. A site has been purchased opposite the Chevrolet branch in Oakland and factory construction will begin in the spring.

Tax Receipts Cut by Car Reductions

Many Millions of Dollars Will Be Lifted in Detroit and Other Industry Centers

DETROIT, Oct. 1.—Effect on the finances of the country, in the matter of tax returns on automobiles, as a result of the cuts announced recently will be considerable and it is estimated by Internal Revenue Collector Grogan that the decrease in taxes in Detroit alone will amount to many million dollars a year.

The Ford cut, according to Grogan, will reduce revenue receipts approximately $500,000 a month. The tax on automobiles is $5 per $100. The average price reduction on Ford cars was $150. On a basis of Ford production of 3500 cars a day, approximately 87,500 a month, this would indicate a revenue cut of around $650,000 a month. Ford production since Sept. 1 has been about 4000 a day which would make the revenue loss between $7,000,000 and $10,000,000 a year on that car alone.

This is but one item. The price reductions necessarily will cut the profits of the concerns making them with the result that the effect will be felt in the income tax and excess profit tax collections from these companies. It is the contention of many persons—and this applies particularly to manufacturers who resent the action of Ford, that he was taking into consideration this saving in income and excess profit tax when he made the reduction and they contend the decrease in the government charges he will have to pay will in a great measure offset the loss occasioned by the reduction.

With the normal production of Maxwell-Chalmers, Hudson-Essex, Paige and the Detroit Studebaker factory, averaging around 200,000 a year, on a basis of an average cut of $150 a car, the decrease in war tax alone would be $1,500,000. On some of those cars however, prices were decreased as much as $250.

At all events the Treasury department will find its receipts greatly depleted as a result of the price reductions in the Detroit automobile factories. This does not take into consideration the many industries allied with the automobile which are expected to announce price reduction from time to time.

For the fiscal year ending June 30 the automobile tax collected in the first district of Michigan, which includes Detroit, amounted to approximately $45,250,000. During July and August the tax paid was more than $10,000,000.

HUGHES RESIGNS A. E. A. BERTH

CHICAGO, Oct. 4 — Charles P. Hughes, one of the field secretaries of the Automotive Equipment Association, has resigned. He has not announced his future plans.

Jobbers to Request Freight Allowances

Question Will Be Taken Up by Representatives—Consider Lower Prices

NEW YORK, Oct. 4—Concern over means of absorbing the recent freight rate increases was manifested by speakers at the quarterly meeting of the Eastern Automotive Equipment Association here this week. After mention was made of the fact that several manufacturers had increased their freight allowances to jobbers, or had set up allowances where none existed before, the speakers pointed out that many manufacturers had taken no cognizance of the higher transportation charges, as far as the jobbers' commission is concerned.

It was the general opinion that the question was one to be worked out between manufacturer and jobber and its importance was emphasized by reference to a jobber whose freight charges of $10,000 a year would be increased $3,700 under the new rates applying to the Eastern territory.

There was some discussion of possible price reductions in the automotive equipment field and comment to the effect that such reductions would force jobbers to work out means of reducing overhead or increasing volume of business as an alternative to accepting a lesser net profit on business during a given period.

R. A. Picard reported for the standardization committee of the Automotive Equipment Association that the task of standardizing lists of manufactured articles was progressing and would probably be passed upon at the November meeting of the national association, permitting issuance of the projected loose leaf book of standards in the spring. The standards, approved first by manufacturers and then by the association, will govern listing and packing, and will classify the thousands of products in the automotive equipment field. Where a unanimous decision is not possible there will be recommended practices instead of standard practices.

The Eastern association's present officers, headed by George B. Shearer, Jr., of Gaul, Derr & Shearer Co., Philadelphia, were renominated.

William W. Webster, commissioner of the Automotive Equipment Association, addressed the meeting.

LOUISVILLE REPORTS SALES

LOUISVILLE, Oct. 4—Automobile dealers in the territory of Louisville who have had the prices of the cars they are distributing reduced are in a very pleasing frame of mind as to the future business outlook. They report many sales since the reduction. In fact, the buying public seems to have been waiting for just such a cut and the demand at present is as much as the dealer can do to supply them. Of course, this applies to dealers whose cars have been cut in prices.

The conditions of the other dealers have in no way changed. They are selling a few cars but the demand does not crowd them for the cars. Most of these dealers are just remaining quiet and are doing nothing to offset the tendency on the part of the public to buy the other cars, except to increase their selling ability. Bankers of Louisville state they see no change in the amount of automobile paper now and what it was two or three months ago, and they state this reduction in their minds will have no effect whatever on automobile loans.

Hendee Lays Off 200, Will Maintain Prices

SPRINGFIELD, MASS., Oct. 2—Giving cancellation of orders and general business conditions as the cause, the Hendee Mfg. Co., manufacturers of Indian motorcycles, this week laid off 200 of its 1700 employees and the rest will be affected by a reduction in working hours. Col. Lindley D. Hubbell, works manager, said no further layoff is anticipated, but beginning next week the factory will go on a schedule of 7 2/3 hours per day, closing at 4 in the afternoon, instead of 5. It will continue to be closed Saturday afternoons. Reduction of working hours was decided upon so as to retain the present force and avoid laying off more. Under the old schedule, Colonel Hubbell said, further layoffs would be necessary.

Because nearly all parts used in the manufacture of the machines are made in the plant in this city, making the labor element an important one and requiring the carrying in stock of raw materials for months, no reduction in price of Indian motorcycles is anticipated by the Hendee Mfg. Co., according to F. J. Weschler, vice-president. It is pointed out that since 1914 the prices of motorcycles have increased but 30 per cent. It was pointed out that a reduction in the price of any motorcycle would cause an unnatural loss in profits and mean financial suicide.

FUNDS AUTHORIZED FOR OWEN

WILMINGTON, DEL., Oct. 4—Upon the petition of the receivers recently appointed for the Owen Magnetic Motor Car Corp. of Wilkes-Barre, Pa., the United States District Court here has entered an order authorizing the receivers to borrow $100,000, at a rate of interest not over 6 per cent, to be used in completing a block of 25 automobiles which were under construction and nearly finished when receivers were appointed.

DELAGE SALESROOMS OPEN

NEW YORK, Oct. 2—The Delage automobile is one of the most recent of foreign cars to open a salesroom in this city. Percival K. Frowert Co., Inc., has this car on display at 26 West Fifty-eighth Street. The chassis is listed at $12,000 and the complete car in the neighborhood of $18,000.

Commission Views Price Guarantees

Policy Tends to Keep Prices Up Says Association Counsel—Helps Big Makers

WASHINGTON, Oct. 5—Testifying before the Federal Trade Commission today relative to the practice of giving guarantees against price decline, T. D. McCloskey, counsel for the National Association of Sheet and Tinplate Manufacturers, claimed that the maintenance of this policy keeps the price of automobiles up. It was contended that the manufacturers seem bound to use every effort to prevent a price decline because of the financial loss involved.

McCloskey, speaking in behalf of the organization, told the commission that the guarantee created an artificial market; stifled competition because small manufacturers could not compete on high markets; gravitates buyers to the manufacturers who can protect against loss, and encouraged speculation. The specific reference to the automobile trade was viewed with interest because of the present conditions in the trade.

The commission submitted a digest of a questionnaire sent out to all industries last spring. Listed in the replies opposing the guarantee were excerpts from a letter of Eclipse Mfg. Co., Indianapolis, manufacturers of automobile accessories, in which it was stated that "selling price moves in sympathy with cost of production. If jobber is given guarantee, manufacturer should also be protected." The Hudson Motor Specialties, Philadelphia, claimed it was "really a form of rebating and results in unfair competition. Manufacturers not so protected must pocket loss if decline occurs. Practice might lead manufacturers to overstock dealers and thereby eliminate competitors." The Fageol Motors Co., Oakland, Cal., manufacturers of tractors, said it "does not give guarantee—not sound business."

Reckless Buying Encouraged

The Hawkeye Tire & Rubber Co., Des Moines, tire manufacturers, advised the commission that the "guarantee encourages reckless buying and tends to hold up prices. Such contracts are a contingent liability to manufacturer, and whatever losses ensue must be taken into cost of production. Stifles competition to the extent that old and powerful companies may exclude prospective newcomers from the field. If practice is prohibited it will have immediate effect of reducing prices and toning business generally." The Republic Rubber Co. of Youngstown has written that "practice is injurious to trade and carries no benefit for the public."

On the other hand, Bright & Co., Reading, equipment jobbers, favor the plan as it "induces buyer to stock up for a long period." Practically all manufacturers and jobbers in agricultural implements were in favor of the practice.

Exports of Automobiles and Tires for July

COUNTRIES	—Commercial—				—Passenger—				Parts	Automobile Tires			All other tires
	Complete Cars		Chassis		Complete Cars		Chassis			Casings	Inner tube	Solid tires	
	Number	Dollars	Number	Dollars	Number	Dollars	Number	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars
Austria	....	....	....	....	....	....	....	....	....	404	....	....	....
Azores and Madeira Is.	....	....	....	....	....	....	....	....	814	....	....	....	....
Belgium	25	13,625	....	....	204	232,523	....	....	17,175	85,841	4,208	....	....
Czechoslovakia	....	....	....	....	....	....	....	....	....	154	....	....	....
Denmark	....	....	....	....	41	67,352	....	....	16,596	19,416	1,543	1,120	....
Finland	6	9,875	24	44,842	33	47,937	....	....	6,334	18,997	622	....	11,600
France	1	2,843	....	....	36	73,431	1	3,000	88,138	115,459	306	....	....
Germany	....	....	....	....	....	....	....	....	100	22,589	2,349	....	....
Gibraltar	....	....	....	....	....	....	....	....	229	127	....	....	....
Greece	9	11,000	3	5,021	34	48,810	1	2,000	3,322	6,369	512	1,300	....
Hungary	....	....	....	....	2	3,500	....	....	....	....	....	....	....
Italy	....	....	....	....	15	21,075	....	....	11,577	10,457	8,050	....	145
Malta, Gozo, and Cyprus Is.	....	....	....	....	....	....	....	....	572	....	....	....	....
Netherlands	15	34,193	5	14,600	242	341,610	10	14,990	30,608	209,825	11,627	....	626
Norway	62	64,813	26	40,387	614	802,721	....	....	39,015	210,939	11,190	36,702	4,291
Poland and Danzig	4	1,947	1	3,800	29	55,129	....	....	2,409	14,345	6,200	300	....
Portugal	2	4,193	....	....	18	37,410	....	....	4,247	3,607	913	....	....
Roumania	....	....	....	....	....	....	....	....	238	....	....	....	....
Russia in Europe	....	....	....	....	1	707	....	....	197	600	90	....	....
Spain	9	23,604	3	11,700	220	405,955	8	10,203	30,172	151,539	15,995	46,233	185
Sweden	40	81,747	33	66,056	784	1,118,567	....	....	26,653	305,520	38,546	11,602	12,058
Switzerland	7	8,640	....	....	75	68,944	1	931	3,946	7,655	1,823	....	....
Turkey in Europe	....	....	....	....	2	1,745	....	....	2,926	....	....	....	....
England	282	307,529	167	243,310	2,303	2,550,953	116	127,369	1,434,001	577,625	31,664	659	12,703
Scotland	2	4,570	9	8,282	65	84,792	....	....	3,089	13,884	342	....	....
Ireland	18	13,050	....	....	42	45,453	....	....	7,002	173	40	....	....
Yugoslavia, Albania, etc.	....	....	....	....	1	700	....	....	....	3,866	605	....	....
Bermuda	....	....	....	....	....	....	....	....	....	92	....	....	....
British Honduras	....	....	3	1,485	....	....	....	....	231	996	88	....	....
Canada	100	224,997	168	318,806	749	1,032,730	102	96,363	2,299,021	41,441	5,475	19,690	3,367
Costa Rica	....	....	....	....	7	11,912	....	....	448	639	92	....	....
Guatemala	....	....	4	4,847	10	17,798	....	....	2,501	4,232	2,756	436	....
Honduras	9	5,737	....	....	4	3,640	....	....	2,199	1,537	327	....	....
Nicaragua	....	....	....	....	....	....	....	....	1,482	3,001	67	350	....
Panama	....	....	5	7,553	9	16,442	8	7,500	8,604	37,863	21,048	7,229	8,606
Salvador	3	3,010	....	....	12	15,651	1	483	4,967	4,756	643	....	....
Mexico	94	139,914	2	6,520	238	207,564	11	8,368	91,199	98,730	16,419	6,894	2,189
Newfoundland and Labrador	....	....	....	....	27	44,756	....	....	2,646	2,563	245	67	216
Barbados	1	495	....	....	7	3,208	....	....	1,781	2,540	252	....	15
Jamaica	7	14,225	....	....	39	32,789	....	....	10,852	40,053	2,519	....	204
Trinidad and Tobago	....	....	7	14,985	19	27,709	....	....	11,419	26,704	3,279	7,000	....
Other British West Indies	....	....	....	....	2	2,200	....	....	1,232	1,163	137	....	12
Cuba	93	274,361	19	42,550	157	192,396	....	....	96,683	150,753	52,679	13,842	931
Virgin Islands of U. S.	....	....	....	....	5	3,329	....	....	1,466	254	120	....	....
Dutch West Indies	....	....	....	....	....	....	....	....	603	80	140	....	30
French West Indies	....	....	....	....	2	2,600	....	....	1,399	200	....	235	....
Haiti	3	1,700	....	....	....	....	....	....	2,435	7,293	1,503	....	....
Dominican Republic	....	....	....	....	40	39,125	....	....	6,058	4,462	3,535	741	1,084
Argentina	12	36,845	9	15,089	240	382,502	....	....	245,472	144,634	18,431	6,165	8,052
Bolivia	....	....	....	....	1	1,200	....	....	1,302	1,150	....	....	....
Brazil	73	55,352	....	....	369	466,220	6	8,557	30,861	266,776	67,189	6,264	10,328
Chile	2	4,922	....	....	36	77,349	12	5,796	41,291	53,152	14,230	2,595	450
Colombia	35	24,732	....	....	92	102,370	....	....	6,701	10,997	2,080	132	530
Ecuador	8	21,991	....	....	13	20,701	....	....	7,581	455	....	....	....
British Guiana	....	....	....	....	2	2,714	....	....	1,225	3,267	145	....	418
Dutch Guiana	....	....	....	....	....	....	1	545	73	60	26	....	....
Peru	21	24,619	3	9,724	34	62,701	2	1,131	34,006	18,635	3,551	3,000	....
Uruguay	....	....	1	2,300	326	265,868	....	....	29,956	81,657	7,510	350	53
Venezuela	7	9,421	4	4,965	53	55,081	1	750	19,005	21,601	5,252	89	3,758
China	4	11,700	35	24,710	235	286,926	14	21,641	15,437	63,385	1,988	909	....
Kwantung, leased territory	....	....	....	....	32	29,650	....	....	....	....	....	....	....
Chosen	....	....	....	....	3	6,400	4	5,420	11,602	3,824	530	....	....
British India	49	137,907	32	93,150	1,414	1,680,848	2	2,691	107,028	123,350	9,881	12,733	7,080
Straits Settlements	14	32,585	12	19,164	415	441,351	....	....	45,641	110,700	4,988	8,170	....
Other British East Indies	....	....	....	....	84	88,798	2	4,883	16,360	1,066	156	....	....
Dutch East Indies	30	76,881	20	40,520	743	976,005	3	8,033	30,684	41,124	4,725	30,210	7,500
French East Indies	2	5,858	....	....	40	50,596	....	....	7,589	....	....	....	....
Hongkong	....	....	....	....	52	57,101	....	....	3,056	174	19	2,387	....
Japan	33	69,400	96	192,052	168	227,273	54	69,754	46,840	57,011	3,961	400	7,161
Persia	....	....	....	....	....	....	8	3,465	....	....	....	....	....
Siam	....	....	....	....	26	26,739	....	....	704	1,420	200	600	....
Turkey in Asia	7	3,880	8	12,000	97	72,256	5	2,165	3,600	1,270	390	1,242	....
Australia	2	8,010	25	26,648	341	394,395	251	304,758	65,793	264,504	20,296	407	11,030
New Zealand	22	63,622	18	22,909	556	673,653	25	27,406	113,327	367,172	22,921	20,139	24,787
Other British Oceania	....	....	....	....	2	2,830	....	....	1,239	1,170	100	....	....
French Oceania	....	....	....	....	2	2,315	....	....	936	1,525	193	197	229
Other Oceania	....	....	....	....	3	2,800	....	....	449	475	....	....	303
Philippine Islands	37	58,790	30	80,865	382	446,006	25	10,828	92,824	315,966	23,994	18,860	9,348
Belgian Kongo	....	....	1	600	3	3,000	....	....	68	56	10	....	....
British West Africa	28	40,950	19	21,364	63	77,593	16	26,083	31,321	31,903	3,477	300	....
British South Africa	24	29,023	20	34,124	594	647,016	12	21,441	82,461	45,440	9,047	206	1,955
British East Africa	....	....	....	....	....	....	....	....	319	9,229	....	....	....
Canary Islands	1	4,197	....	....	11	16,535	....	....	....	2,500	....	....	....
French Africa	....	....	17	20,002	4	2,964	6	2,898	9,354	1,909	33	....	46
Kamerun, etc.	....	....	....	....	....	....	....	....	....	1,137	150	....	....
Italian Africa	....	....	....	....	5	3,075	....	....	....	....	....	....	....
Morocco	....	....	....	....	26	33,082	....	....	576	2,500	....	....	....
Portuguese Africa	4	2,112	....	....	12	6,364	....	....	637	....	....	....	....
Egypt	2	5,104	....	....	45	66,203	....	....	12,436	9,126	....	....	....
Total	1,209	1,969,758	829	1,455,020	12,612	15,421,513	708	799,452	5,394,350	4,269,123	473,413	265,745	151,160

Firestone Reduces Price on Old Stock

Obsolete Sizes and Treads to Be Cleared Out—Present Prices to Be Continued

AKRON, OHIO, Oct. 5—The Firestone Tire & Rubber Co. has reduced prices on obsolete sizes and treads to dealers only while the stock lasts. Some of the company's branches have supplies of the tires on hand, but their manufacture was discontinued some time ago. The regular stock is selling at March prices and the company asserts that it expects no reductions for some time to come.

All the Akron rubber companies reiterate the assertion that no decrease in tire prices is justified or contemplated. Their announced intention to make a 10 per cent blanket increase to automobile manufacturers, effective Oct. 1, was rescinded, however, following Henry Ford's sudden visit to the city and conference with officials of the Goodyear, Goodrich, Firestone and Miller companies.

Reports that Ford came here to buy the Firestone plant were widespread, but both Ford and Harvey Firestone declined to comment on them.

"If we deny them, such a denial will only tend to give prestige to the reports," said Ford. "The rumor is not an actual report but has been concocted in the brain of somebody who is trying to find out something."

Ford denied having made statements that unless tire companies reduced prices he would build his own plant. His visit here resulted in the placing of heavy orders with several companies. The Miller company announced larger Ford orders for next year, and the Detroit manufacturer also conferred with President Seiberling of Goodyear. Firestone and Goodyear supply the bulk of Ford tires.

Following the arrest of a supposed New York I. W. W. agitator and the receipt by the Akron director of public safety of a black-hand letter, threatening the destruction of Firestone, Goodrich and Goodyear plants, the guards around the factories have been materially increased and a close watch is being kept.

Lee Tire Cuts Price 15 to 20 Per Cent

NEW YORK, Oct. 1—Lee Tire & Rubber Co. to-day reduced prices on its automobile tires from 15 to 20 per cent. In a statement on the reductions, President John J. Watson, Jr., said:

"We feel that the consuming public is reluctant to buy tires at the present level of war prices and with the general decline in the raw material market, is demanding prices nearer normal or on a pre-war basis.

"The Lee company is largely forfeiting the profit on its inventory of manufactured goods in reducing prices, but feels that it will be more than compensated by assisting the customers to get back more rapidly to normal living conditions.

"The Lee company has largely increased its capacity during the past year and has ample working capital for its increased business without requiring any new financing.

"Crude rubber, which a few months ago was selling at 50 cents a pound, is now quoted at 23 cents a pound. Fabrics which were selling at $2.80 a pound early in the year are now quoted at $1.85 a pound. Labor costs, however, are still at their highest figure."

Want Guarantee Continued

WASHINGTON, Oct. 6—Tire manufacturers want the practice of guarantee against price decline continued, M. A. Clark told the Federal Trade Commission to-day, speaking in behalf of the Rubber Association of America. Despite marked declines in prices recently, tire manufacturers believe that it is imperative that the trade practice be allowed in future because of the economic waste which would result if it were wiped out.

Tire Exports Total $35,000,000 to August

WASHINGTON, Oct. 2—Approximately $35,000,000 worth of tires have been shipped overseas in the eight months' period ended Aug. 31, according to statistics compiled by the Bureau of Foreign and Domestic Commerce. The exports for August amounted to $3,714,088, as compared with $2,350,901 for August last year.

Solid tires shipped abroad in August, 1920, were valued at $265,549, making the total for eight months $2,362,429. Shipments of casings occupied the predominant position in tire exports. The August total was given at $3,121,530 and from Jan. 1, 1920, to Aug. 31, inclusive, $29,518,013. The inner tubes exported in eight months were valued at $3,029,523.

FALLS RUBBER RECAPITALIZES

AKRON, Oct. 4—Stockholders of the Falls Rubber Co., manufacturers of tires with a plant located in Cuyahoga Falls, a suburb of Akron, have voted an increase of capital stock from $1,000,000 to $2,500,000. Only $500,000 of the increase is authorized in common stock at $100 per share. Present stockholders will be given the first privilege in purchasing. Extensive improvements are planned by the company. Hereafter the annual meeting will be held in Cleveland and a new vice-president will be placed in charge of the Cleveland office.

FORD STATION NEAR READY

HAMILTON, OHIO, Oct. 4—The hydro-electric power station of the tractor plant here of the Ford Motor Co. will be completed by Nov. 15. It will represent an investment of $1,000,000 and will complete the first unit of Ford activities in this city. This plant complete will represent an investment of $3,000,000.

Goodyear Arranges $25,000,000 Loan

Chicago Bankers Advance Funds to Meet Company's Needs—No Financial Difficulty

AKRON, OHIO, Oct. 5—Negotiations have been virtually completed for the financing of the Goodyear Tire & Rubber Company by a syndicate headed by the Continental & Commercial Trust Company and A. G. Becker & Co. of Chicago. It is understood that they have agreed to accept $25,000,000 of Goodyear notes, which will be adequate to meet the needs of the corporation pending the revival of the tire business. The Goodyear cash reserves have been depleted, it is understood, by large commitments for crude rubber, which were entered into when the price was much higher.

The Chicago bankers have convinced themselves of the strength of the Goodyear position. Including subsidiary companies, the complete assets, according to the showing made to the banks, amount to $145,000,000, while the current liabilities, all told, are $70,000,000. This takes into account all of the company's plants and other fixed assets, all of which are free of mortgages. These fixed assets include rubber factories, cotton mills, cotton plantations and rubber plantations. The Goodyear company is the largest producer in the world of automobile tires and its business has grown from $31,056,129 in 1914 to an estimated total of more than $200,000,000 for 1920.

Chicago banks were invited to take the company's notes after President F. A. Seiberling had refused to accept the terms of New York bankers, which he considered ruinous. The New York banks have not felt kindly toward Seiberling since the recent issue of stock was sold by the Goodyear company without recourse to them.

Rumors All Tommyrot

Ugly rumors in regard to the Goodyear company have been in circulation on the New York Stock Exchange and the curb market for the past week. Seiberling and the Chicago bankers are convinced that they were started deliberately in an attempt to injure the company. In discussing these reports with the correspondent of AUTOMOTIVE INDUSTRIES, Seiberling said:

"There is absolutely no foundation for such rumors. There is no truth in the statement that we are having financial difficulties. There is no truth in the statement that Eastern bankers are here discussing the matter. There is no truth in the report that Goodyear directors have held a special meeting here this week. There is no truth to any of the reports which are being circulated in New York about our company. They are all tommyrot."

Goodyear business continues on an even keel, according to reports, showing sales for the first 26 days of September.

Locomobile-Mercer Now Hare Motors

Consolidation Follows Operating Combine—Directorate Linked with Kelly-Springfield

NEW YORK, Oct. 5—Consolidation of the Locomobile Co. of America and Mercers Motor Co. under the title of Hare Motors was announced to-day. The net assets of the two companies are stated to be in excess of $11,000,000. The amalgamation follows the formation last spring of Hare's Motors as an operating company for the Locomobile, Mercer and Simplex companies. Mercer Motors has absorbed the Simplex, which now automatically becomes a part of the new combination. The combination is of the manufacturing companies and will have no effect on the distribution and selling of the cars, as the operating and distributing company will proceed along the lines already planned. The names of the three cars will be retained and there will be no change in the factories.

Announcement of the amalgamation follows closely the addition of five new directors to the board of the Locomobile company. This addition greatly improves the financial position of Hare's Motors. Three of the new directors are members of Emerson, McMillin & Co., bankers. They are Marion McMillin, A. P. Lathrop, president of the American Light & Traction Co., and Charles Willard Young. The others are R. L. Kinne of Utica and Herbert L. Dillon of Eastman, Dillon & Co., New York.

McMillin, Lathrop and Young are directors of the Kelly-Springfield Motor Truck Co. and constitute the controlling factor in that organization. It has been reported that the truck company would be consolidated with Hare Motors, but no formal statement to this effect has been made. In fact it is doubted in well informed quarters whether there will be an actual amalgamation. It is considered certain, however, that the Kelly-Springfield Co. will enter into a selling agreement with Hare's Motors to dispose of its trucks. These commercial vehicles would take the place of the Riker truck, the manufacture of which was discontinued by Hare's Motors.

Truck Company Position Strong

The Kelly-Springfield Truck Co., which was incorporated in 1912, acquired the business of the Kelly Motor Truck Co. of Springfield, where its plant now is located. The factory has an annual capacity of 3000 trucks. The company has an authorized capital of $2,000,000 in common stock and $4,000,000 in preferred. Outstanding are the common, including $560,000 sold for cash in February of this year, and $1,014,000 worth of preferred. The preferred has preference as to assets and has full voting power. No mortgage can be created without the consent of 75 per cent of each class of stock.

Tendency Toward Lower Prices Slows

(*Continued from page* 736)

In the tractor field, The Hart-Parr Co., Charles City, Iowa, announces that it will guarantee purchasers against a reduction in price before June 1, next.

J. D. Dort, president of the Dort Motor Car Co., says no reduction in price is possible "except in cases where an excessive profit has been obtained in the past." His company has increased prices only 17 per cent in the past two years. W. C. Leland, vice-president of the Lincoln Motor Co., declares he can see no conditions for a long time to come which will permit any reduction in the price of the new Lincoln car.

The Boston News Bureau, which specializes in financial news and which denounced Ford's price cut, has changed its mind and says that "most corporate executives are now ready to admit that Ford showed good common sense and quick judgment."

Parts makers in the New York district have made no concerted move and none of them is willing to admit as yet that a price cut is possible. They have held one or two informal meetings, but they have been strictly executive sessions.

Velie Motors Buys Rutenber Company

MOLINE, ILL., Oct. 5—The Velie Motors Corp. has purchased the Rutenber Motor Co. of Marion, Ind., one of the most widely known manufacturers in this country of gasoline engines for motor vehicles. The Velie Co. will use the plant for the manufacture of its own motors, but it is now engaged in taking over the property and no announcement has been made as to whether the works will be used exclusively by Velie or whether there will be a surplus production which will be placed on the market. It was said at the Velie offices here that they were not prepared as yet to make a formal announcement regarding the purchase.

DEFER ALL-AMERICAN ACTION

CHICAGO, Oct. 4—Judge Carpenter in the United States District Court here to-day deferred action on the bankruptcy petition filed against the All-American Truck Co. He will hold the case in abeyance until all the creditors have an opportunity to express their wishes. It now seems probable that the company will be tided over its present financial difficulties without resorting either to bankruptcy or receivership, the creditors having displayed a desire to co-operate so far as possible.

WILLIAMS TIRE ORGANIZED

AKRON, Oct. 4—A new tire company for Akron, known as the Williams Akron Tire Co., has been incorporated with the secretary of state of Columbus, with an authorized capital of $500,000.

Engineers Say Roads Fail to Meet Needs

Agree Present Day Transportation Too Much for Experience Thus Far of Builders

AKRON, Oct. 2—The statement that there is not a highway engineer in the country who can design an adequate highway to carry present-day transportation was one of the many astounding outcomes of the meeting of the Federal Highway Council held here this week. Mr. Goldbeck of the office of Public Works, Washington, who is conducting a series of experiments on highways, was responsible for the statement concerning the engineers. The failure of present highways is more frequently due to the sub-soil or sub-grade underneath the top pavement rather than to the pavement. Frequently the water is not prevented from reaching this sub-grade and when the freezing and thawing follow there is a serious disturbance of the road surface which has been evidenced very much during the last two years.

There is scarcely a highway engineer who understands how surface pressures are distributed through the soil supporting the highway. Recent experiments have shown that where a motor truck wheel is resting on the highway, the downward pressure is exerted approximately 4 ft. forward and 4 ft. behind the point of contact of the wheel on the pavement. The pressure is transmitted to the sub-grade soil to a point perhaps 12 ft. in depth under the middle of the pavement. The transmission of pressure to the sub-grade varies according to the character of the soil.

Experiments by the Bureau of Public Roads have shown that it is possible to treat some sub-grade soils chemically so as to waterproof them, so to speak, thereby preventing the water from getting into the sub-grade soil and freeing the highway from the consequent disturbances of melting and thawing. If this can be done a great good can be accomplished. Too frequently drainage for a highway is aimed to carry water away from the sub-grade rather than to prevent the water from getting into it.

Study Wear on Highways

The Bureau of Public Works is carrying out investigations to show the effect of different traffic on highways. Experiments to date have shown that the impact of a vehicle such as a motor truck on the highway is much greater with a solid tire than with a pneumatic, and when the solid tire is partly worn the impact increases rapidly. Tests have shown that the impact from pneumatic tires does not increase with speed, whereas there is a gradual increase of the impact with speed with solid tires.

It was the general consensus of opinion that drainage is not understood as it should be, and that in many cases present drains are entirely ineffectual.

Special Cables

French Makers Ask Government Support

Would Prohibit Car Imports and Lift Gasoline Tariff—Italian Factories Reopen

(By cable to AUTOMOTIVE INDUSTRIES)

PARIS, Oct. 4—The French Syndicate of Automobile Manufacturers has petitioned the government to adopt drastic measures for the protection of the industry. This step is taken because of extremely bad general conditions and the fear of foreign competition. The plea of the manufacturers calls for the prohibition of all automobile imports except spare parts, removal of the import duty on gasoline and development of alcohol as a substitute fuel. The government also is asked to use every effort to obtain more favorable freight rates for foreign shipments and to reduce the present price of coal as well as to put an end to the sale of army motor vehicles.

The government has not yet replied to the petition but is giving it serious consideration. The movement is directed chiefly against the United States. Although automobile imports into France have decreased 33 per cent as compared with last year, French manufacturers fear that they are on the eve of a great American automotive invasion. The recent announcement of price reductions by American manufacturers and the big drop in price announced by the Ford Company of France, have given rise to grave apprehension on the part of manufacturers in this country.

Conditions in France undoubtedly are bad. All manufacturers who are in production have had to reduce their output and those not yet in production have modified their plans. In their appeal to the government, the manufacturers complain bitterly because France has had to absorb almost all the automobiles discarded by the Allied armies.

100 Tractors Begin Trials

The French agricultural tractor trials, in which 100 machines from all the nations engaged in the industry are competing, commenced this week at Chartres. Approximately 3,000 acres will be plowed. Features of the competition are a 48-hour non-stop test and a drawbar test. It is the announced intention of the Ford company to run a Fordson six days and nights without a stop. Citroen, Sizaire & Naudin and Doriot-Flandrin are automobile firms which have entered the tractor field.

The dispute between Italian manufacturers and their workers appears to have been ended, for even in Turin which was the center of the revolutionary movement, 60 per cent of the men have voted to return to work under the terms of the contract which was signed. A few of the factories already have resumed work, but in other cases there has been a delay because of the men's claim for pay covering the time they were in occupation of the shops. The owners have refused to accede to this demand, declaring the strikers merely wasted raw material.

Fiat Head Soon to Retire

The Fiat factory is expected to resume work next week. The company will be transformed into a co-operative establishment and it is reported that President Agnelli, one of the founders of the establishment and a personal friend of Premier Giolitti, will retire.

There was a striking demonstration of cordiality between the workmen and Agnelli when the plant was formally turned over to him by the workers. He was greeted with enthusiastic applause upon his arrival at the gates, accompanied by the head of his technical staff. When he was escorted to his office, he found everything exactly as he left it thirty days ago.

In confirming the reports of his determination to give the workers a large share in the management of the company, President Agnelli said:

Will Test New Economic Idea

"The progress of revolutionary ideas among the masses and the concrete form these ideas were assuming, made it impossible for a great company like the Fiat to be ruled any longer with authoritarian methods and according to the forms of the capitalist system. For some months past the Fiat directors despite all their endeavors on behalf of the men, had been exasperated by the nightmare of having some tens of thousands of employees in their works who were not co-operators but enemies. It was impossible to go forward in these conditions which threatened to grow still graver through the result of actual struggle which has meant the humiliation of masters in the face of their workmen. The future greatness of the Fiat firm in international industry depends on the overcoming of the present internal crisis in which event the Fiat may furnish the pioneer example in Italy of a perfect modern industrial organization."

Technical Men Go On Strike

The technical staff of the Pirelli tire factory which had no part in the revolutionary movement which is now supposed to have come to an end, has gone on strike. BRADLEY.

N. A. C. C. to Discuss Foreign Trade Plans

Edge Act, Jones Shipping Bill and Other Important Matters Set for Study

NEW YORK, Oct. 7—Numerous subjects will be brought before the annual meeting of export managers of the National Automobile Chamber of Commerce to be held at the chamber offices here tomorrow. Plans for the convention, made public by George F. Bauer, foreign trade secretary, include discussions of the Edge law, the Jones Shipping act, reciprocal trade and tariff regulations, as well as other subjects.

Of particular importance will be the consideration of c.i.f. quotations. In response to a constant demand from overseas customers that all quotations be made to them on the basis of c.i.f. (cost, insurance, freight), this subject will be brought up, and it is expected that Roy S. McElwee, director of the Bureau of Foreign and Domestic Commerce, will address the convention on this point. The Edge foreign banking law will be discussed by Phillip B. Kennedy, vice-president of the First Federal Banking Association, and formerly director of the Bureau of Foreign and Domestic Commerce. Louis Domeratzky, of the commerce bureau, will speak on the subject of reciprocal trade relations, and the Jones bill will be discussed by a representative of the Shipping Board. In addition, Franklin J. Johnston, publisher, will describe business conditions in Europe.

Other topics for general discussion will be on the subject of:

"Should the passenger car manufacturer combine with the motor truck manufacturer in maintaining a single export department?"

"Should an export department for greatest effectiveness be located at the factory or at a seaboard terminal?"

"What type of representative should the automobile manufacturer send abroad?"

The foreign trade committee of the N. A. C. C. is composed of J. Walter Drake, chairman (Hupmobile); Peter S. Steenstrup (General Motors), Jay Rathbun (White), L. J. Ollier (Studebaker), and H. B. Phipps (Hudson).

FISK FORCE CUT IN TWO

CHICOPEE FALLS, MASS., Oct. 4—The Fisk Rubber Co. tire plant in this city is operating at about 50 per cent capacity, averaging between 4500 and 5000 tubes and casings daily, as compared with a normal maximum of 10,000. A curtailment program, which was inaugurated some months ago, has permitted steady though reduced operation. The company has a large but well balanced inventory, which is being steadily reduced. The regular quarterly dividend of 75c. a share on the common stock was paid Oct. 1.

Bethlehem Finances Approved for Month

Liquidation of Plant After November 1 Dependent on Stockholders—Force Reduced

NEW YORK, Oct. 4—The tentative program of the receiver of the Bethlehem Motors Corp., for activities up to Nov. 1 has been approved by both the bank and merchandise creditors committees. No action has been taken concerning operation of the plant beyond that date. The bankers, whose claims aggregate $1,700,000, do not seem inclined to invest any more money in the company. Whether its affairs will be liquidated after Nov. 1 will depend upon the determination of the stockholders in regard to a protective committee.

The receiver's program calls for the completion between Sept. 17 and Oct. 31 of 228 trucks. There are now in stock 206 completed vehicles. Sales requirements for this period are estimated at 323. Export orders booked will take 86 trucks, of which 20 will go to Manila, 18 to Delhi, India, 12 to Barcelona, Spain, and 9 to Pernambuco, Brazil. Foreign orders expected total 120, of which 43 would go to Havana. Sixty-seven orders have been received since the receivership became effective.

The number of employees in the Allentown plants has been steadily reduced since the receiver took charge. It was cut on Sept. 28 in the two plants from a total of 968 to 550. The process of reducing operating expenses will be continued and it is estimated that the week of Oct. 11 there will be only 350 workers in the Allentown plant and 50 in the one at Pottstown.

Expenditures from Aug. 25 to Sept. 28 were: Preferred labor claims, $41,120; labor, $103,953; materials, $36,902; general expenses, $44,219, a total of $226,194. The balance in the bank on Sept. 28 was $15,341. The total commitments of the receiver for September and October schedules were $164,115. The amount yet to be made is $83,686. The amount of inventory liquidated is valued at $389,230.

Cash received from sales and collections amounted to $119,718 and through borrowed money, $117,955.

Parts Makers Study Changes in Price

(*Continued from page* 737)

with this high priced material and cannot reduce prices."

Labor is the real factor, in the opinion of Herbert L. Lord, sales manager of the Detroit Lubricator Co.

"I can see no prospect now of a reduction in labor costs or a decided increase in efficiency," he said. "Under the circumstances there is not much chance for a cut in price with us. Steel and wood may drop but there is nothing to indicate a reduction in our end."

In discussing the reduction in price by the Timken company, Secretary-Treasurer Dickerson said:

"We have reduced the price of our product 7 per cent, not because we were making such a profit we felt we could reasonably cut prices, but rather because we felt it our duty to aid the movement to help reduce excessive prices."

C. D. McKim, sales manager of the Continental Motors, said:

"Parts makers are not price originators. We are affected by labor and material costs just as every other manufacturer and right now are campaigning among sources of supply seeking reductions which will enable us to keep pace with the downward trend and live. We have reduced the price of OK engines 5 per cent not because we feel our profits justify it but simply to add our mite to the downward movement. The majority of the parts makers are standing firm in their refusal to cut prices, but I think they soon will be forced to join our movement."

September Production Surprise to Directors

NEW YORK, Oct. 6—General business conditions were discussed at length today by the directors of the National Automobile Chamber of Commerce at their monthly meeting here. It was agreed that they were exceedingly spotty. While trade is good in some sections it is almost negligible in others. The important question for which the directors sought an answer was, "What must be done to change the buyer's mind so he will buy the motor car he needs?" No satisfactory answer was evolved and the deliberations were continued to-day. It is the opinion of some of the directors that price cuts will provide the remedy while others hold a contrary view.

The directors discussed the tax situation thoroughly. They have been informed the government contemplates imposing a heavier burden on the automobile industry but they think some of those they already are carrying should be lightened.

Preliminary reports were made on September production and the size of the figures were rather surprising in view of the business depression.

The gasoline situation was found to be satisfactory. The directors were especially pleased with the increasing production of crude oil.

A quarterly members' meeting of the chamber is being held to-day and space for the New York and Chicago shows is being drawn this afternoon.

WILLYS-OVERLAND RESUMES

TOLEDO, OHIO, Oct. 4—The Willys-Overland plant resumed work this morning with 6500 employees, including the 4500 who were laid off last week. The company has not determined as yet whether to operate on a basis of three days or six days a week. Considerably increased sales have been shown since the recent price cuts.

Government Urges Truck Line Economy

Better for Most Farmers Than Privately Owned Vehicles, Says News Letter

WASHINGTON, Oct. 1—It developed here to-day that the Department of Agriculture, through the Bureau of Markets, has gone out of its way to discourage the purchase of motor trucks by individual farmers. The distribution of this advice in the Weekly News Letter, which has a nation-wide circulation among farmers, is bound to react upon the industry. In cautioning the farmer against individual ownership of trucks, the Bureau of Markets recommended the establishment of co-operative motor-truck associations in the rural districts, thus reducing the amount of equipment to a minimum.

Because of the respect a farmer ordinarily has for the utterances of the Department of Agriculture, dealers will undoubtedly find themselves hard put in discounting this statement: "In very few instances is it advisable for a farmer to purchase and operate a motor truck solely for his own needs, as the initial investment, cost of upkeep, and the limited time the truck is likely to be in use, make the venture expensive.

The inconsistency of the department's position is revealed in a comparative study of reports issued almost simultaneously by the Bureau of Markets and the Office of Farm Management. The latter organization conducted an inquiry into the advantages of motor truck operation in two large agricultural districts. The findings were almost identical and the farmers, in every instance private owners of motor trucks, were generally agreed as to the diffusion of benefits.

Lines Relieve Risk Burden

The Bureau of Markets believes that operation of trucks by private individuals for profit relieves the farmer of risk, because the only cost would be a nominal cartage charge. Yet the bureau does not think any too well of this phase of motor truck transportation. It is claimed that when the farmer has learned to depend upon this means of transportation, the rates would be raised to a point that the agriculturist could ill afford to pay. Establishment of rival transportation companies, the bureau says, would eventually force a suspension of business, leaving the farmer without truck service.

All these pessimistic phases of the problem are emphasized to show the relative advantages of the bureau's plan for a co-operative farmers' transportation organization. Farmers are advised that several organizations have been operating successfully with a limited number of motor trucks. The Farmers' Co-operative Co. of Harford County, Md., is taken as the best example of success in this line.

Engineers to Study New Organization

Delegates of Engineering Bodies to Meet in Washington Nov. 18—S. A. E. Invited

WASHINGTON, Sept. 30—The first meeting of the American Engineering Council of the Federated American Engineering Societies will be held in this city Nov. 18 and 19, to complete the organization and analyze the activities which the Federated American Engineering Societies hope to carry out. This will be the first meeting of this organization since its formation here June 3 and 4, at which time 71 engineering societies had representation through delegates.

At the November meeting Herbert C. Hoover will give one of the most important addresses. The remainder of the two days will be taken up in organization work and planning future activities.

The purpose of the Federated American Engineering Societies is to deal with welfare matters and non-technical subjects of importance to the general engineering fraternity and not in any sense to take up technical subjects as handled by the different engineering societies which are or may become members of it. It is not an organization of individual members but a federation of societies. It is not a new technical society but succeeds the present engineering council which was organized some years ago by the four founder engineering societies, namely, civil engineers, mechanical engineers, electrical engineers and mining engineers.

To Unite Engineering Interests

The purpose of the Federation of American Engineering Societies is to afford an opportunity for the consideration of matters of common interest to engineers as well as for the consideration of public welfare problems in which the engineering profession is interested. It is considered to be the duty of the engineer to take up public service work, and the Federation is expected to bring the engineer more into the public eye. Engineers have been criticised for professional aloofness, and this situation should be remedied. There is an ever-growing realization that in time of national crisis, matter-of-fact men, engineers, with a scientific point of view, must control, for they know basic economic facts. It is also realized that some form of federation affords a good channel for engineering societies to conduct this service for public welfare.

The organization of the Federated American Engineering Societies will be carried on through what is known as the American Engineering Council, which will consist of representatives from member societies, this representation being on a basis of one from every 100 to 1000 society members, with an additional representative for each additional thousand members or major fraction thereof. From this representation will be formed an executive board of thirty consisting of six officers and twenty-four others. This executive board will meet monthly or as often as may be necessary.

The financing is on a basis of approximately $1.50 per member for each member of any society. With the Society of Automotive Engineers the cost per year would approximate $7,500. The constitution provides that the members of the executive board shall have the whole or a part of the cost of attending meetings paid from the funds of the council.

S. A. E. Consider Advantages

So far there is no specific outline of what benefits outside of those of a general character any member society will obtain. The S. A. E. has not as yet joined the federation, and it is probable the financial burden will be one of the most difficult objections to overcome, as the dues per member are approximately 10 per cent of the annual dues to the S. A. E. It is at present impossible to outline all the direct benefits that any member society can derive.

There is no question but that a federation of engineering societies is desirable. It may be that the Federation of American Engineering Societies is not organized on lines that will ultimately prove the best, but it does represent a democratic start. The S. A. E. has been invited to unite as a charter member, which privilege it was denied by the Engineering Council.

TO MAKE MOTOMETERS ABROAD

NEW YORK, Oct. 4—President George H. Townsend and General Manager Earl V. Hennecke of the Motometer Co. will sail this week Thursday on the Imperator for a trip to England, France, Italy, Switzerland, Belgium and Holland, starting home Thanksgiving Day. The object of the trip is to plan the manufacture of the motometer in England and France, in which countries the company has had a large and growing business, this despite the existing exchange rates. They will also investigate general conditions and their effect on American automotive exports.

WILLYS RESIGNS FROM CURTISS

NEW YORK, Oct. 4—John N. Willys has resigned as president of the Curtiss Aeroplane & Motor Corp. and has been succeeded by C. M. Keys, who recently purchased control from the Willys interest. Walter P. Chrysler and other Willys representatives on the board also have resigned.

IDEAL BUYS PORTER RUBBER

CLEVELAND, Oct. 4—The Porter Rubber Co. of Salem has been purchased by the Ideal Tire & Rubber Co. of this city. The Salem plant will continue operation as before. The consolidation of the two companies is the first step in the plan for the Ideal company to take over ten of the smaller rubber companies in Ohio.

METAL MARKETS

IN spite of the fact that steel market statisticians continue to extend solace to dispirited producers in the form of figures belittling the percentage of the total output of steel consumed by the automotive industries, there is no denying the chastened mood that has come over the market as a result of last week's "housecleaning" in so far as contracts at higher prices than those of the United States Steel Corp. are concerned. It is well enough for those who seek to cheer up the independents and smaller producers, to show that the automotive industries consume less than 5 per cent of the total rolled steel output, but they cannot straddle the far more important point, to wit, that it is this 5 per cent, say 1,600,000 tons a year, that makes or breaks the steel market. If the contention that the automotive industries were responsible for the fancy priced steel market of last Spring, which these selfsame statisticians make, is correct, then the credit for the market's return to saneness and reason also belongs to the automotive industries. It is all well enough for these somewhat inconsistent comforters to predict that the railroads and building trades will eat up what steel the automotive industries will not take, but because of the greatest diversity of steel products absorbed by the automotive industries, it is unmistakably the latter which takes that margin of the output of the various branches of steel manufacture upon which hinge prosperity and profits. While there were wild prophecies that upon Judge E. H. Gary's return from Europe there would be important announcements with reference to the future price program of the chief interest, best information obtainable is to the effect that events in the last week or two have so glaringly vindicated the corporation's price policy of the last two years that its continuance is assured. The corporation's unfilled tonnage, although it will very likely show quite a drop for September, is such that the exigency of a downward price revision in prices appears to be uncalled for at this juncture, while advances are surely not to be expected at the present. Readjustment of the corporation's prices is generally not looked for before next year.

Pig Iron—In the absence of business, the market is nominal but generally conceded to be about $3 @ $5 below what it was a month ago. The Westinghouse Electric & M'f'g Co. is in the market for a heavy tonnage of foundry for its South Philadelphia plant, but is apparently deferring the purchase until the market is more settled.

Steel—Resale billets have been offered in Pittsburgh at as low as $55. Some plate mills are rolling heavy sheets because of want of plate orders. A Detroit automobile manufacturer is reported to have been offered 1,500 tons of galvanized sheets for early delivery at 7½c., Pittsburgh.

Aluminum—Aluminum body sheets, a while ago very scarce and quoted at 65c., are now offered at 55c., base, in the outside market. Foreign ingots have been offered at as low as 29c.

Copper—In spite of further price shading by producers and resellers, the market is neglected by consumers. Copper wire is now quoted 1c. lower at 22c.

Tin—The Sterling exchange market continues to dictate prices.

Lead—With the chief producing interest's price down to 7¾c., New York, the "outside" market became stagnant. Foreign metal for last quarter is offered at 7½c.

INDUSTRIAL NOTES

Machine & Stamping Co., Ltd., Toronto, has changed its title to Russell Gear & Machine Co., Ltd. The management of the company will remain the same, T. A. Russell, president; Lloyd Harris, vice-president, and David Ayr, general manager.

Commercial Engineering Laboratories has been organized in New York City to conduct a consulting and testing laboratory. Associated in the business are Roy T. Hurley, M. E. Cheney, R. D. Quinn and George R. Blodgett.

Field Body Corp. has been awarded a contract for the entire 1921 business of the General Motors Truck Co. on truck bodies and cabs. New models will be used and patterns now are being made.

National Gear & Truck Wheel Corp. has purchased 120 acres at Vanport, Beaver County, Pa., and plans the erection of a factory to cost $750,000.

Carlisle Tire Corp. has started production in its new plant at Stamford, Conn. The company now has a capacity for manufacturing 400 tires a day.

Utility Tire & Machinery Co. has leased for two years a building at Joplin, Mo., for the manufacture of tire machinery and casings.

Pioneer Truck Co. has completed plans for the erection of six one-story factory buildings to cost $500,000.

Peugeot Company Buys Buffalo Plant Site

BUFFALO, Sept. 30—The Peugeot Automobile Co. of France has bought a site in South Buffalo for the construction of a factory here soon, it was learned this week. The site is 120 by 450 feet. Construction to be completed within 60 days after ground is broken. Production will begin as soon as the machinery is installed.

The Peugeot company builds racing cars. It also builds motor cars for sport and general use. It is said 500 men will be employed. Later the force will be increased to 800.

Will Not Make French Car

NEW YORK, Sept. 30—A. G. Kaufman, importer of Peugeot cars into the United States, said the company which has bought the Buffalo site was not connected with the Peugeot company of France. Manufacture of the French car will not be undertaken here, he said.

COMMERCE TO MAKE NEW TRUCK

DETROIT, Oct. 4—Commerce Motor Car Corp., after a two months' shutdown, resumed operations last Friday when it was announced that the company in future would devote its efforts to building a high speed economy truck. The job will be known as Model G and will be equipped with pneumatic tires, with a speed rating between 38 and 40 miles an hour. The truck will be built to carry from 1500 to 2250 pounds.

The new Commerce truck is equipped with 3¾ by 5 in. Continental motor, Salisbury rear axles, Spicer universal joints and Detroit transmission. The clutch is a cone type 14 in. in diameter. The wheels are wood artillery equipped with 34 by 4½ Goodyear non-skid pneumatic cord tires on both front and rear wheels. Among the other units are Detroit Steel Product Co. springs, Jacox steering gear, Zenith carbureter and Steward vacuum feed. The cooling system is thermosyphon with a cast tank radiator. The car will be known as the Mercantile Express model, and will sell for $1,350 in chassis form.

G. M. C. Sales Managers Take Stand on Prices

NEW YORK, Oct. 6—A meeting of the presidents and sales managers of the subsidiary companies of the General Motors Corp. was held at Detroit Tuesday. President W. C. Durant presided. General trade conditions were discussed and a sales policy was mapped out but no statement was forthcoming from Durant's office concerning what decision was reached. It is understood General Motors will stand firm against any price reductions and will adhere to its policy of guaranteeing purchasers against loss on purchases of its cars.

TIMKEN LAYS OFF 900 MEN

COLUMBUS, Oct. 4—The Columbus plant of the Timken Roller Bearing Co. has posted notices that beginning at once the entire night force and a part of the day force would be laid off indefinitely. Manager Charles Replogle announced that this course was taken because of many cancellations of orders for bearings from automobile concerns. The highest efficiency of the plant has just been reached. In all about 900 employees were laid off leaving about 600.

SEYMOUR CORPORATION FORMED

MILWAUKEE, Oct. 4—The W. E. Seymour Mfg. Corp., a new $200,000 corporation organized at Milwaukee to manufacture piston rings and other small parts and materials for the automotive industries, expects to be in production shortly after Nov. 1. It has taken over a shop group at Lisbon Avenue and Thirty-first Street and is remodeling it into a gray iron foundry and machine shop with new casting and other production equipment throughout. The Seymour company will market its product direct to manufacturers of passenger cars, trucks and tractors, as well as the gas engine trade.

W. E. Seymour is president and general manager of the new corporation. He retired recently as vice-president and general manager of the A. O. Smith Corp., Milwaukee. Previously he was production manager of the Eclipse or main works of Fairbanks, Morse & Co. at Beloit, Wis. Other officers are: Vice-president, J. A. Lee; secretary, M. J. Buckley; treasurer, C. J. Gilbert. Lee will be factory manager and E. E. Hirschauter, chief engineer.

Bank Credits

Written exclusively for AUTOMOTIVE INDUSTRIES *by the Guaranty Trust Co., second largest bank in America.*

NEW YORK, Oct. 7—While there seems to be contraction in all lines of business activity corresponding to the decline in prices, it is significant that the chairman of the board of a large steel corporation states upon his return from Europe that, despite a decline in August of unfilled tonnage, he considers the steel industry to be in a healthful condition. Other representative steel men concur in this view and give as their opinion that deflation in iron and steel prices must be slow. These statements and the fact that the world is "short" on steel should strengthen the confidence of those who look to steel as the barometer of business conditions. There is, nevertheless, a noticeable hesitancy on the part of the consumer and manufacturer to buy in the face of a wave of price reductions.

Call money rates advanced slightly last week, with the ruling rate still at 7 per cent, but with a range of from 7 per cent to 9 per cent, as against a constant 7 per cent rate the week previous. Over the same period rates for time money declined to 7¾ to 8 per cent on mixed collateral and 8 to 8¼ on all industrial collateral, as compared with 8 per cent and 8¼ respectively, the week before.

The weekly statement of the clearing house banks showed a deficit in the excess reserves over legal requirements for the first time since July 31. This deficit amounted to $11,043,850, representing a loss from the previous week of $34,545,110. This deficit probably occurred through shipments to the interior from reserve funds held at the Reserve Bank, rather than from funds held in the banks' own custody.

The New York Federal Reserve Bank showed a weaker reserve position last week. The decline in total reserves amounted to $47,109,291, occasioned, in the main, by a large decline in the gold settlement fund. This decline was augmented to a considerable extent by loans of the New York Bank to interior Reserve Banks and by the withdrawals of the member banks as reflected in the clearing house statement.

The ratio of gold reserves to Federal Reserve notes, after setting aside 35 per cent against net deposits, was 48.1 per cent for the Federal Reserve Banks as a whole. This stands as it was two weeks ago, but marks an improvement over last week's ratio of 47.9 per cent. This is a result of slight declines in total bills on hand and total earning assets, and an increase in cash reserves of $13,600,000.

TRENT RECEIVER APPOINTED

TRENTON, N. J., Oct. 5—John O. Bigelow has been appointed receiver of the Trent Rubber Co. upon petition of the McLain, Hadden Simpers Co. and Carl Ludwig. His bond has been placed at $25,000. The receiver will continue the business of the company.

FINANCIAL NOTES

Perfection Tire & Rubber Co. directors have adopted a resolution providing for the sale of $1,000,000 in 8 per cent gold notes for one year to be secured by a trust deed on the company's plant at Port Madison, Iowa. The funds will be used for expansion purposes and will be raised from subscriptions by the company's 23,000 stockholders. This is said to be a temporary financial plan, preparatory to a large issue of preferred stock which the stockholders will be asked to authorize at their annual meeting in January.

Willys-Overland directors will meet within ten days for action on regular quarterly dividend on the common stock payable Nov. 1. Common stock is on a $1 a share annual basis. Net earnings for the eight months ended Aug 31 were $8,344,384 after Federal taxes. This is at the rate of $2.75 a share on the $25 par value common stock, or 11 per cent. Company calculates book value of common stock in excess of $30 a share.

Latex Tire & Rubber Co. has increased its authorized capitalization from $500,000 to $1,000,000. Most of the new issue has been subscribed by present stockholders and Milwaukee and Fond du Lac interests. It will be devoted to financing the construction and equipment of the new plant, purchase of raw materials, and generally developing the business. Edward J. Yockey of Milwaukee is president.

Detroit Carburetor Corp., recently formed with a capital of $100,000, has been organized by the election of E. E. La Fehr, president; T. W. Halloran, vice-president; E. W. Hotchkiss, secretary, and S. B. Solomon, treasurer. The company is preparing for the production of the La Fehr carburetor, invented by the president of the company. La Fehr formerly was an automotive engineer with the Buick company.

Cleveland Tractor Co. is extending to stockholders the right until Oct. 10 to subscribe for additional shares of stock at par on the basis of one share of new stock for every two shares held. The present capital is $6,000,000 with $3,960,000 outstanding. A meeting will be held on Nov. 12 to increase this to $7,000,000.

Ford Motor Co. of Canada earned 67 per cent on its $7,000,000 of capital stock outstanding in the year ended July 31. Net profits were $4,696,243 after deducting $968,590 for taxes. Dividends totaled $1,750,000, leaving a surplus of $8,216,305 compared with $5,270,000 the year previous.

Sterling Tire Corp. reports net profits for the first six months of the year were at the annual rate of $400,000, equal to 16 per cent on the common stock after payment of preferred dividends. Net sales in the six months ended July 3 totalled $1,850,955 and net profits $180,310.

U. S. Rubber Co. reports net earnings of $13,690,924 for the six months ending June 30 after charges and federal taxes. The balance after preferred dividends equals $13.68 a share on the $81,000,000 of common stock. Total assets of $375,920,847 are reported, with surplus of $51,490,036.

Owen Tire & Rubber Co. has declared a quarterly accrued dividend of 1¾ per cent on preferred for the quarter ending March 31. Directors announced shipments were running at the rate of $125,000 a month and that the company was behind in orders.

Auburn Automobile Co. paid a dividend of $1 per share (4 per cent), on the outstanding 30,000 shares of common stock, par 25, together with the regular quarterly dividend of 1¾ per cent on the preferred stock, on Oct. 1.

Kelly Springfield Tire Co. will issue 82,000 shares of common stock of $25 par value, which will be offered at $50 a share to holders of common stock of record Oct. 15 in the ratio of 35 per cent of their present holdings.

Herschell-Spillman Motor Co., Inc., will take no action upon a common stock dividend at this time in order to conserve working capital and maintain the company's financial position.

C. R. Wilson Body Co. directors have declared the regular quarterly dividend of 1¾ per cent on preferred payable Oct. 1.

Moon Motor Car Co. paid the regular quarterly dividend of 1¾ per cent on its preferred stock on Oct. 1.

Autocar Co. has sold all of its $800,000 capital stock issue recently offered at par ($100 a share).

Templar Dividend to Clear Stock Issue

NEW YORK, Oct. 5—Directors of the Templar Motors Co. have declared a dividend of 5 per cent, including 3 per cent regular quarterly payment and 2 per cent extra in stock on the basis of $18 a share to stockholders of record Sept. 30. The announcement stated that the distribution is not to be regarded as a stock dividend, for it will not increase the company's capital because it represents a portion of the stock already issued and under-written, which will be credited back to the company.

The financial statement of the company as of June 30 shows total assets of more than $9,500,000, of which current issues total more than $5,000,000. Current liabilities aggregated less than $750,000, inventory $3,000,000, permanent assets over $1,500,000, and premiums on stock sales more than $2,000,000.

Operating profits up to March 31, 1920, after all dividends, were $442,000, and were increased to $496,738 by June 30 after payment of $180,000 dividends for the June quarter.

From July 1 to Sept. 11, 1920, the company produced more cars than in the full March-June 1920 quarter.

OFFER $2,000,000 STOCK

CHICAGO, Oct. 4—H. W. Dubiskie & Co. are offering $2,000,000 in 7 per cent cumulative sinking fund preferred stock of a par value of $100, and 20,000 common shares of no par value of the United States Automotive Corp. The proceeds will be used to liquidate current liabilities and furnish additional working capital. The company was incorporated in Delaware in 1919 to manufacture automobiles and parts. It acts as a holding company for the Lexington Motor Co, the Teeter-Hartley Motor Corp., the Ansted Engineering Co. and Connersville Foundry Corp. Sales of the company for the first 11 months of the current fiscal year aggregated $11,033,722 with net earnings, before Federal taxes, of $856,694.

MEN OF THE INDUSTRY

O. R. McDonald, sales manager of the automotive equipment division of the Gibson Co., has resigned, effective Nov. 1. McDonald formerly was sales manager of the same department for the Herring Motor Co., Des Moines, and has been an active participant in some of the most constructive work of the Automotive Equipment Association.

Henry Krohn, general sales manager of Paige Motor Car Co., is handling both truck and passenger sales pending the appointment of a successor to C. S. Pike, vice-president in charge of truck sales, who left the company two weeks ago. At the time of his resignation Pike announced that he had no immediate future plans.

I. P. Davis, Minneapolis, has assumed the duties of general manager of the Bukolt Mfg. Co., Stevens Point, Wis. He succeeds O. H. Hoyer, who has gone to Milwaukee to engage in other business. Davis has been associated with the Emerson-Brantingham farm implement interests in various capacities for about ten years.

B. C. Helm, formerly special representative of Hare's Motors with headquarters in Philadelphia has been appointed general sales manager of the company. Helm is recognized in the industry as a capable sales executive and his experience covers thirteen years.

Robert M. De Vignier, for many years mechanical engineer with the Western Electric Co., Inc., and co-designer with Elsworth H. Goldsmith of the Mercury passenger car, has been appointed chief engineer of the American Vulcanized Fibre Co., Wilmington, Del.

John Burke, treasurer of the United States, has been elected president of the International Body Corp. and has accepted the position. He will also be a director of the corporation, which owns a large body-making plant in Newark.

Junius F. Cook of Cleveland, has been appointed special sales representative in South Africa of the Cleveland Tractor Co. Cook was farm equipment administrator for the government during the war.

W. H. Yeldell, formerly secretary and sales manager of the Banner Buggy Co., St. Louis, has been put in charge of sales promotion of the Gardner Motor Co., St. Louis.

Gould Allen will hereafter act exclusively as western sales representative for the Brown-Lipe Gear Co., Syracuse. He will maintain his headquarters in Detroit.

Frank B. Stratton has been appointed sales manager for the Grant Motor Car Co. He was formerly an executive in the passenger car sales department of Packard.

Ralph Van Vechten, vice-president Continental and Commercial Bank, Chicago, has been added to the board of directors of the Advance Rumely Co.

SIMMS ALLEGED BANKRUPT

ATLANTA, GA., Oct. 6—An involuntary petition in bankruptcy has been filed in the Federal Court here against the Simms Motor Car Corp., which has been in the process of organization here for several months. Judge Samuel H. Sibley has issued an order restraining the corporation from disposing of any of its holdings. Claims against the company filed so far and that caused the petition amount to less than $1,500.

Calendar

SHOWS

Oct. 16-26 — Atlanta, Annual Automobile Show in Conjunction with Southeastern Fair.

Nov. 14-21—New York, Automobile Salon, Commodore Hotel Ballroom.

Nov. 15-20—Chicago, Automotive Equipment Show, Coliseum, Automotive Equipment Association.

Dec. 10-18—New York. Motor Boat Show. Grand Central Palace.

Jan. 3-8 — New York, Motor Truck Show. Motor Truck Ass'n of America, Twelfth Regiment Armory.

Jan. 8-15—New York. National Passenger Car Show, Grand Central Palace. Auspices of N.A.C.C.

Jan. 14-21—Milwaukee. Annual Automobile Show, Milwaukee Automobile Dealers' Ass'n.

Jan. 29-Feb. 4 — Chicago, National Passenger Car Show, Coliseum, Auspices of N.A.C.C.

Feb. 5-12—Minneapolis, Annual Automobile Show, Minneapolis Automobile Trade Ass'n.

Feb. 6-12—Columbus, National Tractor Show, Columbus Tractor & Implement Club, Ohio State Fair Grounds.

Feb. 12-19—Kansas City. Annual Automobile Show, Kansas City Motor Car Dealers' Ass'n.

FOREIGN SHOWS

October—London. Commercial Vehicle Show, Olympia.

Nov. 4-13—London, International Motor Exhibition, Society Motor Mfr's and Traders, Ltd., Olympia and White City.

Nov. 6-13—Christchurch, N. Z., Olympia Motors Exhibition.

Nov. 29-Dec. 4—London, Cycle and Motorcycle Show, Cycle and Motorcycle Mfr's and Traders Union, Ltd., Olympia.

Jan. 7 — Sydney, Australian Motor Show.

Jan. 22-29 — Colombo, Ceylon Motor Show.

CONVENTIONS

Oct. 11-13 — Chicago, National Association of Purchasing Agents' Annual Convention.

Oct. 19—Atlantic City, Meeting of Automobile Accessories Branch, National Hardware Ass'n, Mariborough-Blenheim.

Oct. 20 - 22 — Atlantic City, Twenty - seventh Annual Convention National Implement and Vehicle Association, Hotel Traymore.

Nov. 9-11 — Cleveland, Service Managers' Convention, National Automobile Chamber of Commerce.

Nov. 30-Dec. 3—St. Louis, Third Annual Meeting and Exhibition, Automobile Accessories Branch, National Hardware Ass'n.

Dec. 7-10—New York. Annual meeting American Society of Mechanical Engineers. Engineering Societies Building.

Dec. 8-9 — Cincinnati, Annual Convention, Ohio Automobile Jobbers' Association

Dec. 28-30 — Chicago, Annual Meeting American Society of Agricultural Engineers.

Jan. 11-13—S. A. E. Annual Meeting, New York City.

New Company to Build Commercial Dirigibles

AKRON, Oct. 4—Ralph H. Upson, holder of the Gordon-Bennett international balloon race trophy, and captain of the American team in the international races to be held at Birmingham, Ala., Oct. 23, severed his connection with the Goodyear Tire & Rubber Co. Oct. 1. For several years he has been chief aeronautical engineer of the Goodyear and leaves to join a company now forming with New York and Detroit capital financing it to build and operate dirigibles for commercial traffic here.

The new company is expected to be organized about the first of the year, when what is called an entirely new idea in the development of lighter than air craft will be attempted. Upson is quoted as saying he believes the coming and successful dirigible will be of the rigid type, though radically different from the Zeppelin, and he also is of the opinion that dirigible navigation is still in its infancy. He recently returned from a three months observation of aerial navigation methods and Zeppelin development and construction in Europe.

Upson declined to comment on recent reports cabled from Europe that the Zeppelin works would be removed to the United States with the backing of American capital.

The resignation of several Goodrich officials also is said to be impending. Included in those mentioned as about to retire are A. B. Jones, vice-president; George Perks, director of engineering, and Chief Auditor Murray.

SEEK CAPITAL FOR SPACKE

INDIANAPOLIS, Oct. 4—Negotiations are pending with Philadelphia and Pittsburgh bankers for additional working capital which will permit continued operation of the three plants here of the Spacke Tool & Machine Co., for which receivers were appointed last week, on petition of the Vonnegut Machinery Co. of this city. It is understood that the application was agreed upon in advance with the company. The petitioner has a claim of $4,242. The court was informed that the Spacke company has orders for 5000 Brook automobiles, on which deposits of $90,000 have been made by agents, and for more than 5000 automobile axles. The assets of the company are estimated at $1,930,000 and the liabilities at $896,000.

New York Truck Show Planned by Association

NEW YORK, Oct. 2—A motor truck show will be held in this city Jan. 3-8, according to plans now being formed by the Motor Truck Association of America, of which T. D. Pratt is general manager. The building tentatively selected is the Twelfth Regiment Armory, at Columbus Avenue and West Sixty-second Street, two blocks from Broadway. The date is the week before the car show.

Following the mammoth show of last year in the Bronx, remote from downtown New York, the truck show matter has been much discussed with the result that the National Automobile Chamber of Commerce decided not to stage truck shows this year. The New York Automobile Dealers Association then considered the project, but dropped its plans.

AIRPLANE MADE FIREPROOF

MINEOLA, L. I., Oct. 4—A demonstration of a method for fireproofing the naturally combustible parts of an airplane, invented by Parker H. Bradley, was given at Hazlehurst Field near here recently before Glenn Curtiss and other aircraft experts. A Curtiss biplane, treated by Mr. Bradley's method, ascended to an altitude of 3000 ft. when fireworks were discharged from it. Magnesium sprays were suspended from the axle of the landing gear and lit up the field. Although sparks from the fireworks constantly fell on the wings the machine did not catch fire.

Gasoline Supply Low Despite Production

WASHINGTON, Oct. 2—Though a distinct reduction in gasoline reserves has been reported for July, the Bureau of Mines to-day announced that there was no cause for alarm inasmuch as the demand for motor fuel would lessen with the approach of winter. The refinery statistics showed increased production for the seven months but on July 31 only 25 days' supply of gasoline was at hand. This slump of gasoline stocks went beyond the reduction experienced in 1918 when only 27 days' reserves were reported at refineries.

Refiners are quite confident that they can bridge the gap between demand and supply when motor cars are not used so extensively particularly during the cold weather. All records in production were broken in California during July but the consumption outdistanced the output and stocks declined. Improved transportation has enabled refiners in Wyoming, Texas and Oklahoma to send heavy shipments to the Pacific Coast territory.

The average daily output for July, 1920, amounted to 13,658,702 gal., as compared with 11,048,121 gal. last year. Yet the total stocks on July 31, 1920, were 413,279,319 gal., as against 514,919,358 gal. in 1919.

The Bureau of Foreign and Domestic Commerce reported to-day that the August exports of gasoline and naphtha were 58,661,151 gal. or double the amount for the corresponding period last year. These products were valued at $16,093,269, as compared with $7,321,882 for 29,587,503 gal. in August, 1919.

JEFFERSON RUBBER FORMED

JEFFERSON, WIS., Oct. 4—Jefferson has been selected as the location of a new tire and rubber industry to be known as the Jefferson Rubber Co., capitalized at $500,000. R. W. Lyons of Chicago will be president.